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1 what the medical records were of those persons
2 who were, if there were such persons that went
3 through the cloud, what those medical records
4 disclosed?
5 A My review of their medical records may or
6 may not affect the opinion I have or that I've
7 expressed in my reports in this case. It would
8 depend what -- well, let me explain why.
9 If the issue is whether or not these 13
10 plaintiffs whose records I have reviewed were
11 exposed to arsine, as indicated by their elevated
12 plasma hemoglobins or by symptoms that they
13 reported, I'm not sure the extent to which my
14 opinion in that regard would change by looking at
15 the medical records of Solkatronics employees who
16 were on the roof. I'm just not sure if one would
17 necessarily bear on the other.
18 Q Well, would it be of interest to you to
19 determine what the plasma free hemoglobin levels
20 of those folks were that were actually exposed to
21 the concentrated cloud of arsine gas?
22 MR. WARD: Object to the form of the
23 question. There's not any evidence that they were
24 exposed.
25 THE WITNESS: It would matter if there

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1 that you have on these people that applies?
2 A Yes, it is the only marker. And the
3 only -- as we've already discussed, it's either real
4 or it's spurious because of mechanical problems in
5 the blood draw.
6 Q And all the other markers, blood markers
7 or urine markers, that would demonstrate arsine
8 exposure, none of those are -- appear to have been
9 found in any of these 13 people; is that correct?
10 A Correct.
11 Let me also add that I didn't review their
12 records, but there's a summary table that plaintiff
13 counsel gave to me that has elevated plasma
14 hemoglobins for other individuals among the 192
15 plaintiffs, suggesting to me either a remarkably
16 systemic mechanical or laboratory error.
17 Q Which form were you referring to?
18 A I think you've marked it as Exhibit 4.
19 It's a table that says, "Clients with High
20 Plasma Hemoglobin." Some of those are the 13
21 plaintiffs whose medical records I reviewed. Some
22 are not.
23 Q This is a total of 19 out of 192?
24 A Yes.
25 Q And with respect to that -- what is that

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1 was information on exposure concentrations at
2 various distances from the release point.
3 Q (BY MR. TUCKER) Would you agree that
4 the concentrations are going to be greater at the
5 point of release than they're going to be, say, 3-
6 or 400 yards away?
7 A In general, but if all I was given was
8 their medical records, and let's say hypothetically
9 their medical records show they had normal
10 plasma free hemoglobins, and all the other tests
11 were normal as far as intravascular hemolysis but
12 I didn't have any other information about
13 exposure levels, my opinion is not going to
14 change, because what I'm still missing is what is
15 the exposure range, what is the exposure
16 concentration.
17 Q Well, with respect to persons who were
18 located a distance away from Solkatronics, do you
19 have the exposure concentrations for those people?
20 A I don't have it for anybody.
21 Q But you --
22 A All we have is a marker of arsine gas
23 absorption in the form of plasma free
24 hemoglobins.
25 Q Would you agree that's the only marker

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1 chart supposed to demonstrate, clients with high
2 plasma free or high plasma hemoglobin?
3 A Yes.
4 Q Is plasma hemoglobin, as it said that in
5 that chart as prepared by plaintiff's counsel, in
6 your mind plasma free hemoglobin?
7 A Yes, I believe it's the same thing.
8 Q While we have this here, first of all, do
9 you know about -- my math isn't that great, so I
10 won't try to subtract 19 from 192, but would it
11 seem to you that the balance of the 192 did not
12 have high plasma hemoglobin?
13 A I don't know, because I don't know how
14 many of the balance had it measured.
15 Q Do you have any information any of the
16 rest of them had high plasma free hemoglobin?
17 A No.
18 Q Now, in this chart in the first column,
19 first substantive column we have the name of the
20 individual; is that right?
21 A Yes.
22 Q And then the third column is where that
23 person was located, right?
24 A Yes.
25 Q What is the second column?

21 (Pages 185 to 188)



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EXHIBIT

1b

INGRAM v. AIR PRODUCTS

ROBERT HARRISON

June 22, 2005

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1 A That's the plasma hemoglobin count,
2 which I believe is the same as the plasma free
3 hemoglobin.

4 Q What does the plasma free hemoglobin
5 count mean to you? For example, take Karl
6 Kharas 21.1, that's 21.1 what?

7 A As reported by the lab it's in percent. So
8 if you actually go and look at it, as I did, the lab
9 is reporting it at 21.1 percent with an upper limit
10 of normal of 10.4 percent.

11 One of the things I did is I checked the
12 Exhibit 4 table against the results in the medical
13 records for the 13 plaintiffs that I had, and they
14 all match. So this is accurate, and it refers to the
15 percentage as reported by the lab.

16 Q So for each of these 19, this is referred to
17 as a percent, just as it is called out on your chart
18 which is a part of your report, which is called the
19 "Medical Records Summary Robert Harrison,
20 M.D."?

21 A Yes.

22 Q Looking at these people that are reported
23 to have high plasma hemoglobin, as you look
24 around there's a chart there that places where
25 these folks were?

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1 A Yes.

2 Q Do they appear to be at all points of the
3 compass?

4 A Yes. Most of them are at what is
5 designated with a box. S to the northwest of
6 Solkatronics, and then Karl Kharas is further to
7 the northwest, and he's working at ASEC
8 Manufacturing. I think the S actually is Air
9 Exchangers.

10 Q So thinking in terms of epidemiology 101,
11 looking at that, what possible hypothesis would
12 you look at that you'd want to consider just
13 looking at the pattern of your complaints --
14 complainants that have this characteristic that
15 you've identified as high hemoglobin?

16 A Couple of pieces of information. One is
17 what is the denominator; in other words, what is
18 the population at risk at these various points.

19 Q Okay.

20 A And how many of those were tested on the
21 day of the incident at a point in time where the
22 values would still be relevant.

23 Q Do you know the answer to that question?

24 A I'd want them tested within about 12, no
25 more than 24 hours.

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1 Q Do you know the answer to that question?

2 A Yes.

3 Q You said I want to know this.

4 A Yes.

5 Q You want to know the population of these
6 areas and the times of testing.

7 Do you know that information?

8 A Yes. I would want it between 12 and 24
9 hours. No more than about 24 hours later.

10 Q Let me be more clear: Do you have that
11 information about the other -- about these other
12 folks?

13 A Oh, I'm sorry. I didn't understand your
14 question.

15 I do not have the information on the total
16 denominator, and then of the total denominator or
17 at-risk population, how many were tested.

18 And the second piece of information
19 would be the concentration gradients, which would
20 depend on the factors that I discussed earlier.

21 Q You don't have that?

22 A I don't have that. What I have is a
23 cluster or group of individuals who are working --
24 of those 19 with elevated plasma hemoglobins
25 among the 192 plaintiffs, the majority of them are

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1 to the northwest of the point source release,
2 suggesting perhaps that that was the direction of
3 the release in terms of wind direction, topography
4 or other factors, but that's not necessarily the
5 case, because it could be that the individuals of
6 Air Exchangers happen to be the ones to go to the
7 emergency department and happen to be the ones
8 to get plasma hemoglobins drawn.

9 Q Do you know at what time the authorities
10 cleared the area to be completely -- entire area to
11 be completely all safe?

12 MR. WARD: I object to the form of the
13 question.

14 THE WITNESS: I read the complete
15 report, but I don't remember the exact time frame,
16 the hour that the authorities released this area
17 for, you know, reoccupation.

18 Q (BY MR. TUCKER) Sometime between 4
19 and 5 o'clock in the afternoon ring a bell?

20 A Yeah. I'll take your word for that.

21 Q But you don't remember?

22 A I don't remember without going back and
23 reading the exact report.

24 Q What is mass psychogenic illness?

25 A Mass psychogenic illness is a

22 (Pages 189 to 192)



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<p style="text-align: right;">Page 193</p> <p>1 psychological phenomena where a population 2 shares anxiety, concern about an event or an 3 exposure. The individuals present with a series of 4 physical symptoms, but they're driven by a 5 psychological reaction. 6 Q That's a very real phenomena, isn't it? 7 A It is. 8 Q In fact, you've testified about that before 9 in some other instances, haven't you? 10 A Probably. I mean, it's certainly among 11 the diagnoses that I consider whenever there's a 12 population exposed. 13 Let me add one other definition that I 14 think that you'll find pretty commonly accepted, 15 and that is that the individuals have to be within 16 the same location. So if you had people who were 17 located, let's say, half mile away and who came 18 independently for medical treatment and never had 19 any contact with each other, you would not define 20 that as mass psychogenic illness. 21 Q What about contact that you might get 22 because of the news reports? 23 A I don't think strictly speaking we would 24 define that as mass psychogenic illness. We 25 would certainly take news reports into</p>	<p style="text-align: right;">Page 195</p> <p>1 A Yes. Obviously, it's a form of a mass 2 psychological response. I'm just recalling kind 3 of the strict definition that I've read in the 4 literature -- 5 Q Okay. 6 A -- on mass psychogenic illness in the -- 7 Q You're thinking of a confined area of 8 employment, like one bus, one area of 9 employment, one bus? 10 A Where there's word of mouth, where 11 there's direct communication, where people 12 actually see other people become ill, and they 13 then develop symptoms themselves. 14 Q Did you learn whether or not on the day 15 of this event there were presentations made to 16 employees all around the Port of Catoosa that had 17 evacuated their facilities as to the subjective 18 symptoms of exposure to arsine? 19 MR. WARD: Object to the form of the 20 question. 21 Q (BY MR. TUCKER) Are you aware of 22 whether or not that happened? 23 A I'm not aware whether or not that 24 happened. 25 Q I'll ask you to assume that that did</p>
<p style="text-align: right;">Page 194</p> <p>1 consideration as a physician, you know, in that -- 2 in reviewing their history and determining whether 3 an individual's symptoms are due to psychological 4 distress, but we wouldn't define it as a mass 5 psychogenic illness. 6 I believe, you know, a mass psychogenic 7 illness has to be, you know, naval men on a 8 submarine, or teachers in a school, individuals 9 who are all under the same roof or same location. 10 Q What comes to mind when you describe 11 that to me, Doctor, as the new movies start coming 12 out I'm putting to point the old radio show Orson 13 Welles' War of the Worlds. You're too young to 14 have heard it live. 15 A No, I haven't heard it live. 16 Q But we've all heard the story about it, 17 about how people reacted that they thought that 18 the Martians had invaded the earth because the 19 radio said so. 20 MR. WARD: Is there a question in that? 21 Wait. Wait. 22 Q (BY MR. TUCKER) Would that response 23 be kind of a form of a mass psychogenic response? 24 I hate to use the term illness, but mass 25 psychogenic response?</p>	<p style="text-align: right;">Page 196</p> <p>1 happen. 2 Would that be sort of bringing everybody 3 within the same bus? 4 MR. WARD: Object to the form of the 5 question. 6 THE WITNESS: I don't think so. 7 Q (BY MR. TUCKER) Could it be? 8 A Could it be? No. I've been involved in 9 several -- as I said earlier, several chemical 10 releases, and, you know, physician and public 11 health responses, and have gone on the radio, on 12 television and have written information for people 13 who were exposed that day or that hour, and we 14 always advise people, you know, this is what you 15 ought to do, and if you have these type of 16 problems, you might want to seek medical 17 attention, because people have to know what the 18 health effects are and what they need to be alert 19 to. 20 And what I have always found in those 21 situations, and there has probably been half a 22 dozen involving thousands of people in the 23 community, is that most people come forward 24 because they're worried or they have symptoms, 25 and they're concerned about whether or not</p>

23 (Pages 193 to 196)



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<p style="text-align: right;">Page 197</p> <p>1 they're connected to the exposure.</p> <p>2 But that doesn't create mass psychogenic</p> <p>3 illness or some factitious disorder. It just allows</p> <p>4 the doctors taking care of those people to</p> <p>5 determine whether or not they have true health</p> <p>6 effects or whether there may be long-term</p> <p>7 complications.</p> <p>8 Q Well, for example, one of the things</p> <p>9 that -- let's just ask you to assume -- was</p> <p>10 disclosed to all these folks in the afternoon after</p> <p>11 the event was that you might have gotten the odor</p> <p>12 of garlic, which is characteristic of arsine gas.</p> <p>13 And then lots of people at distant points from the</p> <p>14 area of the release come in with headaches,</p> <p>15 complaining of headaches and nausea and</p> <p>16 weakness, and said they smelled garlic.</p> <p>17 Would that be indicative of the kind of</p> <p>18 response that can occur from disclosing that</p> <p>19 information to a population?</p> <p>20 MR. WARD: Object to the form.</p> <p>21 THE WITNESS: So I guess your</p> <p>22 question -- if I understand your question</p> <p>23 correctly, can you put in somebody's mind that</p> <p>24 they smelled garlic even though they didn't,</p> <p>25 because of a news release?</p>	<p style="text-align: right;">Page 199</p> <p>1 treating doctors didn't know where to draw the</p> <p>2 line. They didn't have the information on</p> <p>3 exposure concentrations; and they reasonably, I</p> <p>4 think, drew the appropriate lab tests where they</p> <p>5 could, because they didn't have information about</p> <p>6 air concentrations. So they were doing blood tests</p> <p>7 instead.</p> <p>8 Q I'm going to read something to you and</p> <p>9 ask if you think this would fit into the definition</p> <p>10 of putting people on the same bus or the same</p> <p>11 plant or the same school. Okay?</p> <p>12 A (Witness nods head.)</p> <p>13 Q If you were near the Port of Catoosa in</p> <p>14 July of 2001, you should read this. Arsine is one</p> <p>15 of the deadliest chemicals in the world. In July</p> <p>16 2001 a cloud of arsine gas was released into the</p> <p>17 air at the Solkatronics plant in the Port of</p> <p>18 Catoosa. Arsine is a highly toxic and lethal form</p> <p>19 of arsenic that causes severe injury and/or death</p> <p>20 in extremely small amounts. It is so deadly that</p> <p>21 one of its uses is for chemical warfare. It is most</p> <p>22 hazardous when it is airborne, as it was when it</p> <p>23 was -- was released by Solkatronics on July 11,</p> <p>24 2001. The arsine release at Solkatronics was the</p> <p>25 largest -- worst and largest accidental spill in the</p>
<p style="text-align: right;">Page 198</p> <p>1 Q (BY MR. TUCKER) That's one way to put</p> <p>2 it.</p> <p>3 A I just want to make sure I understand</p> <p>4 that that's your question.</p> <p>5 Q That's a good question. Answer that one.</p> <p>6 A It's possible.</p> <p>7 Q I mean, at some point away from the area</p> <p>8 of the release, somebody that smelled garlic and</p> <p>9 has a headache would be ruled out as someone</p> <p>10 having been exposed to arsine gas, wouldn't they,</p> <p>11 at some distance?</p> <p>12 A Oh, yeah. I mean, at some distance. If</p> <p>13 somebody came into the ER on July 11th, 2001</p> <p>14 and lived ten miles away and they spent all their</p> <p>15 day inside and said they smelled garlic, I would</p> <p>16 tell them, you know, it probably wasn't related to</p> <p>17 the arsine gas. You don't have anything to worry</p> <p>18 about.</p> <p>19 Q Do you know where you'd draw the line?</p> <p>20 At what distance?</p> <p>21 A I don't know in this situation. It gets</p> <p>22 back to what your exposure concentrations are.</p> <p>23 On the day of this incident, from what I</p> <p>24 could tell from reading the emergency room</p> <p>25 records, the emergency room doctors and the</p>	<p style="text-align: right;">Page 200</p> <p>1 history of the United States. Local physicians</p> <p>2 have determined that the arsine released by</p> <p>3 Solkatronics has caused permanent damage to the</p> <p>4 kidneys, liver, lungs and central nervous systems</p> <p>5 of many persons who were in or near the Port of</p> <p>6 Catoosa. Arsine is extremely hazardous to and</p> <p>7 causes permanent injury to the liver, lungs,</p> <p>8 central nervous system and other internal organs.</p> <p>9 Symptoms of arsine poisoning may include cloudy</p> <p>10 urine, low back pain, memory loss, persistent</p> <p>11 headaches, numbness in the hands or other</p> <p>12 extremities, or prolonged feelings of fatigue.</p> <p>13 Now, reading that, if you are a person</p> <p>14 whowas near the Port of Catoosa in July 2001,</p> <p>15 would that be the kind of thing that would, to use</p> <p>16 your earlier description, put you in the same</p> <p>17 schoolhouse or the same plant?</p> <p>18 MR. WARD: Object to the form. Reading</p> <p>19 it when? Contemporaneous to the event, or</p> <p>20 months later? When are you suggesting that the</p> <p>21 person read this?</p> <p>22 MR. TUCKER: I'm not suggesting any</p> <p>23 particular person did read it.</p> <p>24 MR. WARD: Or at any particular point in</p> <p>25 time?</p>

24 (Pages 197 to 200)



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<p style="text-align: right;">Page 201</p> <p>1 MR. TUCKER: Not yet.</p> <p>2 MR. WARD: Objection. Object to the</p> <p>3 form.</p> <p>4 THE WITNESS: Just what you read to me</p> <p>5 would not put people in the same bus or the same</p> <p>6 factory in terms of mass psychogenic illness.</p> <p>7 Q (BY MR. TUCKER) And is mass</p> <p>8 psychogenic illness a relatively tight definition?</p> <p>9 A Well, that's what I was, you know --</p> <p>10 Q I see you traveling over it.</p> <p>11 A Sorry.</p> <p>12 Q You're thinking about it.</p> <p>13 A I believe it has a pretty tight definition. I</p> <p>14 think you'll see some variation in the medical</p> <p>15 literature.</p> <p>16 I am trying to remember, actually,</p> <p>17 whether it has a, you know, psychiatric definition.</p> <p>18 I don't think it does. I think you'll find</p> <p>19 descriptions and definitions in the medical</p> <p>20 literature after an event or an exposure. It's the</p> <p>21 reason why I believe you'll find that people have</p> <p>22 to be in the same boat, if you will.</p> <p>23 Q Would hearing that kind of information be</p> <p>24 the sort of thing that would create, you would</p> <p>25 expect, would create a response that might be</p>	<p style="text-align: right;">Page 203</p> <p>1 deployment.</p> <p>2 THE WITNESS: You know, I don't know</p> <p>3 on either count. I don't know whether any</p> <p>4 government has -- has manufactured arsine and</p> <p>5 held it in reserve. I don't know if it was ever</p> <p>6 deployed in the field. It would make a -- certainly</p> <p>7 would make a very good chemical warfare agent.</p> <p>8 Q (BY MR. TUCKER) Why would it make a</p> <p>9 good chemical warfare agent?</p> <p>10 A It's very highly toxic.</p> <p>11 Q How does it compare with Lewisite?</p> <p>12 A I don't know.</p> <p>13 Q What is Lewisite?</p> <p>14 A It's another chemical warfare agent. It's</p> <p>15 on the list of potential terrorist agents.</p> <p>16 Q Do you believe that arsine is a chemical</p> <p>17 warfare agent, a viable chemical warfare agent?</p> <p>18 A I don't know. I've been involved in</p> <p>19 chemical terrorism preparedness planning and</p> <p>20 training for the State of California because I'm</p> <p>21 part of the Department of Health Services. And</p> <p>22 my particular unit, you know, does the toxicology</p> <p>23 and epidemiology studies. And arsine gas,</p> <p>24 because it is widely used in the San Francisco Bay</p> <p>25 Area, is on our list of agents to prepare for in the</p>
<p style="text-align: right;">Page 202</p> <p>1 similar to some of the characteristics of a mass</p> <p>2 psychogenic response?</p> <p>3 A No. I think what it would do is some</p> <p>4 people would read that and might become very</p> <p>5 worried about a health problem that they have and</p> <p>6 wonder whether it was related to exposure to</p> <p>7 arsine. Some people might read that and say,</p> <p>8 well, I have no problems, and I'm not worried.</p> <p>9 And then there would be people in between.</p> <p>10 And each of those people would need to go</p> <p>11 to their doctor or to a specialist and ask the</p> <p>12 questions to help sort out whether their problems</p> <p>13 are or are not due to arsine exposure.</p> <p>14 Q Do you know whether arsine was used in</p> <p>15 chemical warfare?</p> <p>16 A I don't know. You mean, was it</p> <p>17 actually deployed? Used?</p> <p>18 Q Has it ever been deployed as a chemical</p> <p>19 warfare agent?</p> <p>20 MR. WARD: When you say used as an</p> <p>21 agent you mean --</p> <p>22 MR. TUCKER: Deployed as a chemical --</p> <p>23 MR. WARD: Or held in reserve for</p> <p>24 deployment?</p> <p>25 MR. TUCKER: Or held in reserve for</p>	<p style="text-align: right;">Page 204</p> <p>1 event that a terrorist would get ahold of a tank of</p> <p>2 arsine from a semiconductor plant.</p> <p>3 Q The semiconductor plants don't have</p> <p>4 arsine there as a nerve gas agent for chemical</p> <p>5 warfare, do they?</p> <p>6 A No.</p> <p>7 Q They use it to make computer chips?</p> <p>8 A Yes, that's correct. But in terms of your</p> <p>9 question would it make a suitable chemical</p> <p>10 warfare agent, it would make a suitable agent for</p> <p>11 a terrorist to use.</p> <p>12 Q I understand that.</p> <p>13 A And so I'm thinking, well, it's pretty</p> <p>14 toxic. Whether or not, you know, the Army or</p> <p>15 another foreign government ever thought of using</p> <p>16 arsine --</p> <p>17 Q That's my real question, has it ever been</p> <p>18 used as a chemical warfare agent by a</p> <p>19 government?</p> <p>20 A I don't know.</p> <p>21 Q What are the clinical presentations of</p> <p>22 dehydration?</p> <p>23 A Thirst, nausea, dizziness, muscle aches,</p> <p>24 fatigue. If it's very severe, trouble concentrating,</p> <p>25 disorientation.</p>

25 (Pages 201 to 204)



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INGRAM v. AIR PRODUCTS

ROBERT HARRISON

June 22, 2005

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<p>1 Q Headache?</p> <p>2 A Headache.</p> <p>3 Q Were any of the persons who were seen at</p> <p>4 hospitals given treatment for dehydration?</p> <p>5 A Not to my knowledge. Some of them had</p> <p>6 IVs attached, but I don't recall reading that the</p> <p>7 diagnosis of dehydration was given to anybody in</p> <p>8 the emergency room.</p> <p>9 Q Were they hydrated at the hospitals?</p> <p>10 A Well, they were given intravenous fluids,</p> <p>11 which is called hydration, but it's a medical term</p> <p>12 of art. It doesn't necessarily mean that they were</p> <p>13 dehydrated.</p> <p>14 Q They received hydration, but that doesn't</p> <p>15 mean that they had been dehydrated?</p> <p>16 A Correct. I know that doesn't make</p> <p>17 complete sense to the average listener, but none</p> <p>18 of them, to my knowledge, had a diagnosis of</p> <p>19 clinical dehydration.</p> <p>20 Q Were the symptoms that they presented at</p> <p>21 the hospital consistent with the ones you have</p> <p>22 described for dehydration?</p> <p>23 A Yes.</p> <p>24 Q And as I understand, you do not know</p> <p>25 from your investigation what the weather</p>	<p>1 blood count. It's similar to the hematocrit. And</p> <p>2 his slightly dropped from 15.5 to 13.8.</p> <p>3 Q What is the normal range for hemoglobin?</p> <p>4 A 13.3 to 17.7. So Mr. Ingram's hemoglobin</p> <p>5 dropped, although was still technically within the</p> <p>6 normal range, went down, and then it came back</p> <p>7 up.</p> <p>8 Q Is there a direct relationship between a</p> <p>9 drop in hematocrit or hemoglobin and an increase</p> <p>10 in the plasma free hemoglobin level?</p> <p>11 A I don't know. I'd have to check that.</p> <p>12 Q As I understand, no one other than Mr.</p> <p>13 Ingram demonstrated any drop in the hemoglobin</p> <p>14 or hematocrit level; is that correct?</p> <p>15 A (Witness examines document.)</p> <p>16 Among those for which the hemoglobin or</p> <p>17 hematocrit was measured, that's correct. Not</p> <p>18 everybody had it measured.</p> <p>19 Q We're looking at the 13, and we can only</p> <p>20 evaluate lab results for people who have lab</p> <p>21 results, right?</p> <p>22 A Correct.</p> <p>23 Q And now that you -- neither you nor I</p> <p>24 determined what person should have lab results</p> <p>25 obtained, do we? That was a physician in</p>
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<p>1 conditions were at the Port of Catoosa on the day</p> <p>2 of the event?</p> <p>3 A That's correct.</p> <p>4 Q Do you know whether any of the 13 had</p> <p>5 been outside long enough that day to get</p> <p>6 sunburns?</p> <p>7 A No. I do not know.</p> <p>8 Q Except for the time involved with respect</p> <p>9 to the hospital to which they reported, do you</p> <p>10 know whether any of these 13 persons that you</p> <p>11 have on that list of 13 missed any work as a result</p> <p>12 of this event?</p> <p>13 A I don't know.</p> <p>14 Q Did the laboratory work of any of the 13</p> <p>15 demonstrate -- first of all, what is hematocrit?</p> <p>16 A It's a blood count. It's a measure of the</p> <p>17 amount of red blood cells.</p> <p>18 Q And when you have red blood cells</p> <p>19 destroyed, does that reduce the hematocrit level?</p> <p>20 A Yes.</p> <p>21 Q Did any of the individuals tested</p> <p>22 demonstrate a drop in hematocrit?</p> <p>23 A Mr. Ingram had a slight drop in his</p> <p>24 hematocrit, 15.5, that's grams. And that was</p> <p>25 his hemoglobin count, which is another measure of</p>	<p>1 Tulsa, Oklahoma that was on the spot making the</p> <p>2 determination whether or not to take blood tests?</p> <p>3 A That's correct. There wasn't a standard</p> <p>4 protocol in place. So everyone who came into the</p> <p>5 emergency room -- the emergency room doctors</p> <p>6 didn't have a sheet of paper that said everyone</p> <p>7 should get this.</p> <p>8 Q So going back through the things that we</p> <p>9 use to diagnose arsine exposure, we have -- as I</p> <p>10 understand your testimony so far, nobody on that</p> <p>11 list has hemoglobinuria, correct?</p> <p>12 A Nobody on what list?</p> <p>13 Q The list with 13.</p> <p>14 A Again, nobody for whom hemoglobin --</p> <p>15 nobody for whom a urinalysis was done with</p> <p>16 hemoglobinuria. I just want to emphasize that not</p> <p>17 everybody had everything measured.</p> <p>18 Q I know you've evaluated these records and</p> <p>19 spent a lot of time studying. Are you aware that</p> <p>20 every person that went to the hospital had a urine</p> <p>21 test taken?</p> <p>22 A Not according to the 13 records that I</p> <p>23 saw. Not everyone had a urine test.</p> <p>24 Q Do you know that all 13 of those people</p> <p>25 decided to present themselves at the hospital?</p>

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1 A It looks to me like not all 13 went to the
2 hospital on that day.

3 Q So what I'm asking you is did you
4 determine in your evaluation of the records that
5 each of the 13 who went to the hospital had, one,
6 a urine test, and two, a blood test, each of those
7 people who are among the 13 who chose to go to
8 the hospital because they thought they should or
9 for whatever reason they were sent, were sent by
10 their employer, had those tests?

11 A They either had a blood test or a urine
12 test, but not everyone had the same test.

13 Q Some had both, some had one, some had
14 the other?

15 A Correct.

16 Q So you can only talk to me about test
17 results that you have, right?

18 A Right.

19 Q And do you have any test result -- just
20 confirming where we are at this point, as I
21 understand, there is no test result for any one of
22 the 13 plaintiffs that shows hemoglobinuria; is
23 that correct?

24 A It's correct, as long as we're clear that
25 not all the plaintiffs had a test for

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1 Q Well, if you destroy red blood cells -- if
2 you count them now and destroy them and count
3 them an hour from now, you're going to have fewer
4 red bloodcells, aren't you?

5 A It depends how sensitive the plasma free
6 hemoglobin is. In other words, can the plasma
7 free hemoglobin go up, become elevated, without a
8 drop in hemoglobin or hematocrit.

9 Q What's the answer to that?

10 A I think it can.

11 Q Do you know of any peer-reviewed
12 literature that says so?

13 A I'll look for you. Not as I sit here today.
14 But clearly -- let me just answer it this way: The
15 peer-reviewed literature states that with arsine
16 exposure, to diagnose poisoning or absorption and
17 exposure that one can use any one of these
18 markers. The literature does not say that a drop
19 in hemoglobin or hematocrit is required.

20 Q But the literature does say that an
21 increase in plasma free hemoglobin is required,
22 correct?

23 A Any one of these. So you could use the
24 haptoglobin, the hemoglobinuria, the hemoglobin,
25 hematocrit, or the plasma free hemoglobin. So

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1 hemoglobinuria. But among the ones that did,
2 none of them were abnormal, didn't show
3 hemoglobinuria if it was tested. If their urine was
4 tested.

5 Q And as to those who were tested, you
6 have some people that have what you have
7 described as elevated plasma free hemoglobin?

8 A Correct.

9 Q And we really haven't talked about that
10 yet, but you have some described that way.

11 And then of those who had their blood
12 tested, one of the 13 had any demonstrable change
13 in the hematocrit or red blood cell volume,
14 correct?

15 A Correct.

16 Q And when the red blood cells are
17 destroyed so that the plasma free hemoglobin level
18 goes up, then at the same time one would expect
19 that the volume of red blood cells or the
20 hematocrit level would go down; is that correct?

21 A Well, that's what you asked me before,
22 and I said I'm not sure -- I need to check that --
23 as to whether or not if you have an increase in
24 plasma free hemoglobin you would necessarily
25 expect a drop in hemoglobin or hematocrit.

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1 there are basically four ways, four different types
2 of tests that can be done.

3 Q If you have none of them, if none of those
4 things are out of line, then you have nothing; is
5 that right?

6 A Well, you either have nothing, or you
7 have a sign or -- or you have a symptom that may
8 be consistent with exposure but it's not enough to
9 cause any of these measurable abnormalities. It
10 doesn't rule out exposure. It just means that
11 there wasn't enough to cause an effect on any of
12 these blood or urine tests.

13 Q If a patient walks in to you today and
14 says, Dr. Harrison, a year ago or 18 months ago I
15 was in an area where there was a release of arsine
16 gas and I think I was exposed to it, you ask that
17 patient that comes in, well, do you have blood
18 tests or urine tests at about the time that
19 happened? No, no, no. What makes you think you
20 have the problem? Well, I have headaches and I
21 have nausea and I have numbness. And would you
22 please examine me and tell me if I have these
23 symptoms as a result of my exposure to arsine.

24 Would you as a physician be able to make
25 the diagnosis that those symptoms are caused by

27 (Pages 209 to 212)



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<p>1 arsine exposure?</p> <p>2 A I'd have to ask you some more questions.</p> <p>3 Q What else would you ask?</p> <p>4 A When was the release of the gas?</p> <p>5 Q 18 months ago.</p> <p>6 A And what was the date?</p> <p>7 Q It was in the summer.</p> <p>8 A What was the exact date?</p> <p>9 Q July 11th, 2001.</p> <p>10 A Do you know what time the release</p> <p>11 occurred?</p> <p>12 Q About noon.</p> <p>13 A Do you know for sure?</p> <p>14 Q About noon.</p> <p>15 A Do you have records that you can give to</p> <p>16 me that show when the exact time of the release</p> <p>17 was?</p> <p>18 Q Yes. They'll show about noon.</p> <p>19 A And tell me about your symptoms on the</p> <p>20 day of exposure. On July 11th how did you feel</p> <p>21 when you woke up that morning?</p> <p>22 Q I don't remember.</p> <p>23 A Tell me about your symptoms that</p> <p>24 occurred that day.</p> <p>25 Q I just didn't feel good.</p>	<p>1 blood pressure? Ever gone to a doctor and had</p> <p>2 your blood pressure taken?</p> <p>3 Q Yes.</p> <p>4 A Do you remember what it showed?</p> <p>5 Q No.</p> <p>6 A Do you take any medications?</p> <p>7 Q No.</p> <p>8 A What kind of work do you do?</p> <p>9 Q Labor, welder.</p> <p>10 A Work with any chemicals on the job?</p> <p>11 Q I'm a welder.</p> <p>12 A Do you have any trouble when you're</p> <p>13 welding? Do you ever get headaches at work?</p> <p>14 Q Yes. I have a headache today.</p> <p>15 A Are your headaches worse when you're at</p> <p>16 work?</p> <p>17 Q No.</p> <p>18 A Do they get better when you're off work?</p> <p>19 Q No.</p> <p>20 A So just constant headaches.</p> <p>21 Q Well, except for when I take Tylenol.</p> <p>22 A What exactly were you doing on the date</p> <p>23 of July 11th?</p> <p>24 Q Welding.</p> <p>25 A Were you indoors or outdoors?</p>
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<p>1 A Can you remember more exactly how you</p> <p>2 felt?</p> <p>3 Q No.</p> <p>4 A Okay.</p> <p>5 Did you go to the doctor?</p> <p>6 Q No.</p> <p>7 A When did you first go to the doctor?</p> <p>8 Q Today.</p> <p>9 A When did your symptoms first start?</p> <p>10 Q Sometime after that event, not very long,</p> <p>11 seemed like a day or two.</p> <p>12 A Do you remember exactly when?</p> <p>13 Q No.</p> <p>14 A And how did your -- what was the first</p> <p>15 symptom that you had?</p> <p>16 Q Headache, fatigue, nausea.</p> <p>17 A How often do you have your headaches?</p> <p>18 Q All the time.</p> <p>19 A Anything make it better?</p> <p>20 Q Tylenol.</p> <p>21 A Anything make it worse?</p> <p>22 Q No.</p> <p>23 A Do you have any other medical problems?</p> <p>24 Q Not really.</p> <p>25 A Been diagnosed with problems, with high</p>	<p>1 Q Indoors, but the doors are open on the</p> <p>2 building.</p> <p>3 A Were you evacuated? Did they tell you to</p> <p>4 leave the area?</p> <p>5 Q Yes.</p> <p>6 A Where did you go?</p> <p>7 Q Across the street.</p> <p>8 A And what did you do across the street?</p> <p>9 Q Stood there.</p> <p>10 A How long did you stand there for?</p> <p>11 Q Couple hours.</p> <p>12 A And then what did you do?</p> <p>13 Q Went home.</p> <p>14 A And did you lose any work time?</p> <p>15 Q That day.</p> <p>16 A Then you went back to work the next day?</p> <p>17 Q Mm-hmm.</p> <p>18 A And when did you start to have problems</p> <p>19 with your headaches?</p> <p>20 Q A day or two.</p> <p>21 A Day or two later?</p> <p>22 Q Mm-hmm.</p> <p>23 A Did you ever have headaches before?</p> <p>24 Q Yeah.</p> <p>25 A How often did you have them before?</p>

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1 Q I don't remember.

2 A Well, you know, we would keep on going
3 like this, obviously. And the question that -- I
4 can't remember the original question, but would I
5 diagnose headaches from arsine exposure in this
6 situation? I think that might have been your
7 original question.

8 Q My original question was I've given you
9 those symptoms that I'm having, headaches and
10 nausea and numbness. Would you say that arsine
11 was the cause of my headaches and nausea and
12 numbness?

13 A Well, I would have to gauge your
14 credibility and your memory. You're not the best
15 historian, because you didn't remember much
16 about what happened that day. You can't exactly
17 remember when your headaches started, and you
18 didn't go to a doctor to document your headaches.
19 It doesn't sound like you went to doctors much
20 before. Doesn't sound like there's going to be
21 much in the medical records.

22 So it would depend, really, on my gauge
23 of your credibility and your accuracy as a
24 historian. And you've -- in the way you role-played
25 that, you're not great.

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1 Q Now, would you be able to say that with a
2 reasonable degree of medical certainty, or are you
3 saying that that's something more than possible?

4 A I would say it to a degree of reasonable
5 medical certainty.

6 Q Do you know of any peer-reviewed
7 literature that would support you on that?

8 A Two papers: One is published a long time
9 ago by Neal Raskin, who happens to be a professor
10 of neurology here, probably first paper published
11 on headaches. Dr. Raskin specializes in
12 headaches, and he sees -- he was seeing a number
13 of patients in his practice with headaches that
14 were triggered by chemical exposure. He wrote a
15 paper about it.

16 Then we had one of our --

17 Q What is the name of that paper?

18 A I can't give you --

19 Q Is it one of your cited references?

20 A It is not, but it's Raskin, R-a-s-k-i-n,
21 Neal. It's probably 15 years ago.

22 Q What's the other paper?

23 A The other paper was published by one of
24 our former occupational medicine trainees. He
25 was a physician, and he published it with Charles

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1 Q Could you ever take it beyond possible?

2 A It depends. In this situation where
3 there's no medical records, you never got medical
4 treatment, you're vague in your responses, I might
5 conclude in your case that it's possible, but
6 you're such a crummy historian that I can't date
7 your symptom onset after exposure to arsine,
8 because you said you might have had them earlier,
9 but you don't remember much about them. I can't
10 get a good history about whether they were
11 triggered by the exposure or they got worse.

12 Q What if I changed the facts and said the
13 headaches started after the exposure?

14 A Are you a better historian than your
15 role-play?

16 Q We're changing that a little bit. We're
17 changing the script a little bit.

18 My headaches started after the incident,
19 couple days after the incident. Never particularly
20 noticed headaches before.

21 A If I thought you were a good historian
22 and your headaches started on the day or shortly
23 after the day of exposure, I would probably relate
24 your headaches to exposure to arsine or to the
25 chemical in question.

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1 Becker, who is a physician toxicologist who used
2 to be here as well. He's now in Colorado. So you
3 could probably get it if you did a search on
4 Charles Becker. I can't remember the first
5 author, what his name was, but he updated
6 essentially, you know, the literature on headaches
7 that were triggered by chemical exposure.

8 So I'm aware of those two references. I
9 probably have another 20 to 30 patients that I've
10 evaluated and treated in my practice over the last
11 20 years with headaches that were triggered by
12 one-time exposures that were persistent.

13 Q What about the numbness I've complained
14 of?

15 A Well, I need to ask you a bunch of
16 questions about your numbness.

17 Q Same time. Started a few months after
18 the -- I can't remember, a few weeks, few months
19 after the event.

20 A Can you pin it down for me?

21 Q Between a few weeks and few months
22 after the event.

23 A Is it constant?

24 Q I think so.

25 A Where do you feel numb?

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<p style="text-align: right;">Page 221</p> <p>1 Q In my extremities.</p> <p>2 A Which part?</p> <p>3 Q Lower extremities.</p> <p>4 A Which part of your lower extremities?</p> <p>5 Can you show me.</p> <p>6 Q Kind of down there.</p> <p>7 A Can you point to what feels numb.</p> <p>8 Q Yeah, this doesn't feel right. Feels numb.</p> <p>9 A You're playing an extremely dumb</p> <p>10 patient.</p> <p>11 Q Well, I have --</p> <p>12 A I've never had anybody as dumb as you.</p> <p>13 I'm sorry. I have to say everybody has always</p> <p>14 been able to show me what feels numb.</p> <p>15 Q Have you read the depositions that were</p> <p>16 taken in this case?</p> <p>17 A I haven't, but, you know, they're</p> <p>18 answering questions from attorneys, not from</p> <p>19 doctors. I can always get somebody to say what</p> <p>20 part feels numb. They'll point to their feet. They</p> <p>21 won't point to someplace below the table.</p> <p>22 Q You know where we're headed.</p> <p>23 Here's my point: A year and a half or so</p> <p>24 after an event when you have no lab or data</p> <p>25 whatsoever and we know what the criteria are for</p>	<p style="text-align: right;">Page 223</p> <p>1 has poorly described symptoms of numbness in</p> <p>2 their legs.</p> <p>3 Q (BY MR. TUCKER) I'm being more</p> <p>4 specific than that. I'm saying we got -- you've</p> <p>5 identified for me what you've identified, that</p> <p>6 laboratory values demonstrate what you have</p> <p>7 described as exposure to arsine.</p> <p>8 Now, what I'm asking is when you have</p> <p>9 somebody that has no evidence of exposure to</p> <p>10 arsine, they were just in the area where they</p> <p>11 might have had an opportunity for exposure to</p> <p>12 arsine, and a year later or more they come to you</p> <p>13 with subjective complaints, are you willing as a</p> <p>14 physician to say based on that kind of</p> <p>15 question-and-answer session you went through</p> <p>16 with me, yes, in my legal -- or my medical opinion,</p> <p>17 I would tell anybody and I'd stake my reputation</p> <p>18 on it that this man has headaches and numbness</p> <p>19 that is caused by his having been at the Port of</p> <p>20 Catoosa at the time that arsine was released?</p> <p>21 MR. WARD: Object. The standard is to a</p> <p>22 reasonable degree of medical certainty, not</p> <p>23 staking one's reputation.</p> <p>24 THE WITNESS: I would have to evaluate</p> <p>25 several different lines of evidence. I mean, this</p>
<p style="text-align: right;">Page 222</p> <p>1 diagnosing arsine exposure and you're coming in a</p> <p>2 year and a half later with a possibility of exposure</p> <p>3 and you have subjective complaints, that's a</p> <p>4 pretty big crack in the wall to Spackle over, isn't</p> <p>5 it, to make that leap?</p> <p>6 MR. WARD: Object to the form of the</p> <p>7 question.</p> <p>8 Q (BY MR. TUCKER) It's an Evel</p> <p>9 Knievel-type jump, isn't it?</p> <p>10 MR. WARD: Object to the form of the</p> <p>11 question.</p> <p>12 THE WITNESS: I think there are two</p> <p>13 central questions, and I think you've moved ahead</p> <p>14 to the second one. Most of your parlance of</p> <p>15 questions were around was there exposure to</p> <p>16 arsine, and is the plasma free hemoglobin</p> <p>17 sufficient evidence to show that there was</p> <p>18 exposure and absorption into the body of</p> <p>19 individuals on July 11th, 2001 of arsine.</p> <p>20 I have concluded that the evidence</p> <p>21 answers in the affirmative to that.</p> <p>22 The second question is assuming that</p> <p>23 that is the case, what are the chronic health</p> <p>24 effects. And I think your next line of questioning</p> <p>25 is, you know, what if somebody has a poor history,</p>	<p style="text-align: right;">Page 224</p> <p>1 really gets to how I make an opinion about</p> <p>2 causation in an individual case. I do this ten</p> <p>3 times a week in my practice. I've done it</p> <p>4 thousands of times. This is the reason people</p> <p>5 come to me as a specialist in occupational</p> <p>6 medicine at UC San Francisco.</p> <p>7 I typically don't have exposure data.</p> <p>8 They got exposed to something. Nobody was</p> <p>9 measuring it in the air. So how do I make that</p> <p>10 determination? I could go through it with you.</p> <p>11 Do you want to do it now, or do you want to take a</p> <p>12 lunch break?</p> <p>13 Q (BY MR. TUCKER) However you want to</p> <p>14 do it. You have a page --</p> <p>15 A No. I was looking at the time. It's 12</p> <p>16 o'clock, and I want to know whether this is --</p> <p>17 Q Let's go through and finish it up, and</p> <p>18 we'll get on to something else after lunch.</p> <p>19 A Okay. I take a history, as I was starting</p> <p>20 to go through with you, which includes details</p> <p>21 about the exposure, what do we know about the</p> <p>22 chemical that was used, how was it released into</p> <p>23 the air, what was somebody doing at the time of</p> <p>24 exposure, something about the ventilation, if</p> <p>25 they're directly working with a chemical that</p>

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1 applies, probably in this case it's not pertinent.
2 Were there -- was there a respirator or mask or
3 some other protective device that was used that
4 might have decreased the exposure, were they
5 inside or outside, what was the time of the
6 release, and when was their -- when did their
7 symptoms first start.

8 Because I need to understand, depending
9 on the chemical, the toxicology, the intrinsic
10 toxicology of the chemical. So if somebody tells
11 me there was an arsine leak, I immediately know
12 that that's an acute toxin. It causes immediate
13 toxicity within minutes or hours, but it's not
14 going to be a delayed kind of thing. It's not going
15 to be I'm standing here and three weeks later I
16 was nauseated and had a headache and I think it
17 was from exposure three weeks ago. We know
18 arsine causes immediate symptoms.

19 So I'm going to ask, I'm going to focus in
20 on the day that you were working there.

21 I want to know something about your
22 previous medical history, because I want to know
23 if there's been a change of your symptoms. I want
24 to know about other medical conditions,
25 medications you take, alcohol you use.

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1 Q In this instance we've been talking about
2 where someone comes in to you months later, what
3 tests would you run?

4 A Well, for example, you were complaining
5 about numbness and tingling. I would get a nerve
6 conduction test. I would test how well your
7 nerves are working.

8 Q An EMG?

9 A An EMG.

10 If you had trouble concentrating, memory
11 loss, you told me ever since this exposure I've
12 never been the same, my wife tells me I'm
13 irritable, I lose my temper, I get angry, I can't
14 remember where I'm going, I can't remember what
15 I read in the paper from one day to the next or
16 from one minute to the next, I can't follow
17 instructions at work, I'm not sleeping well, I'd
18 have you go -- depending on the severity of your
19 symptoms, I might have you go to a psychologist
20 who specializes in brain injury who might be able
21 to tell me are you severely depressed or do you
22 have brain injury from this toxic exposure.

23 I might have you go to the neurologist if
24 you were telling me that you had a tremor or you
25 were losing your balance. I might want to rule out

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1 I want to know, then, did you go to
2 get treatment. Generally, but not always, a person
3 that goes to the doctor is affected enough so that
4 they're symptomatic enough that they've sought
5 medical attention. So it's a little bit of a marker
6 for severity, although there are lots of people that
7 are pretty sick and never go to the doctor, so it
8 doesn't necessarily rule out the fact that you were
9 exposed.

10 Q I'm going to listen. I'm just getting some
11 coffee.

12 A Okay. I'll go through your previous
13 occupational history. I want to know what you did
14 in the past, did you have chemical exposures or
15 some other exposures, you know, that built up
16 that might affect your health now.

17 I will then do a physical examination, see
18 if there's any objective signs of health effects that
19 is often focused on your complaints or what I
20 know about the health effects of the chemical to
21 which you have been exposed.

22 I then might order tests that try to
23 confirm my suspicion. There's a whole host of
24 different kinds of tests depending on what the
25 chemical is.

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1 some other nervous condition or neurological
2 disorder and get a second opinion from a
3 specialist that might -- specialist, or I might
4 order an MRI, a brain scan of some type.

5 I'd then get your medical records to see
6 what kind of treatment you had. Not everybody can
7 remember everything for which they had
8 treatment. I'll fill in the gaps by looking at the
9 medical records. And that helps me evaluate the
10 credibility, which is also an important
11 consideration.

12 In my field if somebody has exposure and
13 they're involved in litigation, I always consider
14 whether or not somebody has secondary gain,
15 whether they may be exaggerating their
16 complaints.

17 Q With respect to the 13 people that you've
18 given opinions about in this case, you have not
19 met any of them; is that correct?

20 A I have not.

21 Q And you have not read their depositions?

22 A I have not.

23 Q So are you making any effort to judge
24 their credibility?

25 A I have not. I'm assuming at this point

31 (Pages 225 to 228)



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<p style="text-align: right;">Page 229</p> <p>1 that they're credible. If that's an issue, easy 2 enough for me to talk to them on the phone. I 3 have not raised that as an issue. 4 Q Go ahead. 5 A I'll then obtain any exposure data that's 6 available. It's important for me to know anything 7 that is known. Did anybody do any measurements 8 in theair? I typically don't have those, 9 particularly if there's an accident or, you know, 10 accidental exposure nobody was around to 11 measure at the time. 12 This is where I will sometimes ask either 13 the insurance company or the employer to -- and 14 in some cases I'll ask my colleagues if they will 15 kindly do a quantitative dose reconstruction, a 16 colleague of mine who's a specialist in doing this 17 at UC Berkeley. I'll sometimes ask him if he has 18 the time to do this for me. He'll come up with a 19 range of exposures, and that helps me. 20 Q You didn't do that here? 21 A I did not do that here. 22 I will then review the medical literature 23 or rely on my knowledge of the medical literature. 24 I generally keep up to date, but, of course, there's 25 new articles coming out all the time. So I can't</p>	<p style="text-align: right;">Page 231</p> <p>1 objective findings, laboratory or by physical 2 examination contemporaneous with the event, do 3 you rule out arsine as a cause of symptoms? 4 A I would need to ask you a few follow-up 5 questions. What do you mean by possibility of 6 exposure? 7 Q There was a chemical -- arsine was 8 released in the area where you were, but we don't 9 know the dose or the duration. 10 A That's a different question, dose and 11 duration. 12 Q We know how much was released, and we 13 know how far away it was released but we don't 14 know when it came to us, if it came to us, how 15 much it was or how long it was there. 16 A Again, it's that word possibility of 17 exposure. I make an assessment based on the 18 plausibility using the information that we have. 19 You know, if somebody was 50 miles away from the 20 Port of Catoosa -- 21 Q Look at the map. 22 A -- they weren't exposed. 23 Q Look at your map. Can you put your 24 finger on where Solkatronics is. 25 A 39.</p>
<p style="text-align: right;">Page 230</p> <p>1 admit to knowing everything that's published. So 2 I'll do a Medline or a PubMed search particularly 3 looking at health effects. 4 I will look at unpublished what we would 5 call authoritative publications but they're not in 6 the peer-reviewed literature, they don't turn up on 7 Medline searches. They're documents we looked at 8 from NIOSH or the EPA or OSHA, or the Institute 9 of Medicine, the National Academy of Sciences and 10 so on. 11 I will look at my textbooks to see if they 12 can supplement any information. 13 So I'll pull all those pieces together, and 14 I'll look at the exposure, the toxicology, what I 15 know about the health effects and the biological 16 mechanism, assess the credibility of the 17 individual, look at the temporal relationship 18 between their symptoms and exposure, try to 19 corroborate that with medical treatment, look for 20 any objective signs, look for any objective signs 21 on medical testing or diagnostic studies. I will 22 pull all those pieces of information together to 23 make a diagnosis and to come up with causation. 24 Q If you have a possibility of exposure, you 25 have subjective complaints, and you have no</p>	<p style="text-align: right;">Page 232</p> <p>1 Q Number 39. 2 So whatever size circle you draw, pick 3 number 5, pick number 56, if arsine is released at 4 number 39, common sense tells us that arsine has 5 to go someplace, so there's a possibility of 6 exposure at number 5 and number 56, isn't there? 7 A Yes. 8 Q But we don't know the dose at number 5 9 or 56, or the duration, right? 10 A Correct. We don't know the exact 11 duration. We don't know the dose. We know that, 12 what was it, 58 pounds was released out of the 13 cylinder. We know the approximate time. 14 Q Do you know how far it is -- 15 A Let me put it to you this way: If 16 somebody told me that they were in the emergency 17 room the day before, it's not due to arsine, 18 obviously, but if somebody is in the emergency 19 room that afternoon and they have compatible 20 symptoms of arsine exposure and a bunch of them 21 have an elevated plasma hemoglobin and they're at 22 Air Exchangers, which looks to me pretty darn 23 close to Solkatronics -- 24 Q Do you know how close that is? 25 A I don't have a scale here, but it looks to</p>

32 (Pages 229 to 232)



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<p style="text-align: right;">Page 233</p> <p>1 me like it's within that block bounded by Keystone</p> <p>2 Brand Name and Skiatook.</p> <p>3 Q What did you say?</p> <p>4 A I don't know. I was trying to read that</p> <p>5 road there.</p> <p>6 Q Where?</p> <p>7 A To the east of Solkatronics.</p> <p>8 Q "Skiaook"?</p> <p>9 A "Skiaook." Thank you. It looked like an</p> <p>10 "L" there.</p> <p>11 Q I forgot my original question.</p> <p>12 What was my original question?</p> <p>13 (Record read by the reporter as follows:</p> <p>14 "Q. So whatever size circle you draw,</p> <p>15 pick number 5, pick number 56, if arsine</p> <p>16 is released at number 39, common sense</p> <p>17 tells us that arsine has to go someplace,</p> <p>18 so there's a possibility of exposure at</p> <p>19 number 5 and number 56, isn't there?")</p> <p>20 Q (BY MR. TUCKER) Going back to the</p> <p>21 original question, if you have a possibility of</p> <p>22 exposure, as we've talked about here, looking at</p> <p>23 your map, which is Exhibit 8, and if you have</p> <p>24 symptoms that are compatible with someone who</p> <p>25 was exposed to arsine, that is to say you're</p>	<p style="text-align: right;">Page 235</p> <p>1 of those symptoms or not?</p> <p>2 A I couldn't say, if you were as bad a</p> <p>3 historian as you played, whether it was caused by.</p> <p>4 Because obviously you couldn't tell me much</p> <p>5 about what came before, you can't tell me really</p> <p>6 very much about what came after. You never went</p> <p>7 to the doctor. You were being pretty evasive and</p> <p>8 vague.</p> <p>9 Q Is there peer-reviewed literature that</p> <p>10 would support making a diagnosis of injury caused</p> <p>11 by exposure to arsine without any clinical findings</p> <p>12 or without any laboratory findings that support</p> <p>13 that diagnosis?</p> <p>14 A I didn't understand your question. Could</p> <p>15 you rephrase that.</p> <p>16 MR. TUCKER: Could you repeat it, and if</p> <p>17 you still don't understand it, I'll try to rephrase</p> <p>18 it.</p> <p>19 (Record read by the reporter as follows:</p> <p>20 "Q. Is there peer-reviewed literature</p> <p>21 that would support making a diagnosis of</p> <p>22 injury caused by exposure to arsine</p> <p>23 without any clinical findings or without</p> <p>24 any laboratory findings that support that</p> <p>25 diagnosis?")</p>
<p style="text-align: right;">Page 234</p> <p>1 complaining of headache, nausea, fatigue, but you</p> <p>2 have — but you have no laboratory values of any</p> <p>3 kind that demonstrate any of the exposures to</p> <p>4 arsine, and you have no clinical findings on</p> <p>5 examination that demonstrate exposure to arsine,</p> <p>6 do you then rule out arsine as a cause of those</p> <p>7 self-reported symptoms?</p> <p>8 A I would have to go case by case. I might,</p> <p>9 and I might not. Because I have to go through the</p> <p>10 detailed history that I just went through with you.</p> <p>11 What I would say was that your symptoms</p> <p>12 are consistent with the health effects of arsine gas</p> <p>13 exposure, but I'd need to know all the details,</p> <p>14 what were you doing that day, and exactly when</p> <p>15 did your symptoms start, and what has happened</p> <p>16 to them ever since, and did you ever have them</p> <p>17 before. And you were playing your role-playing</p> <p>18 earlier like a poor historian. And so if you were</p> <p>19 truly as poor a historian as you purport to be, I</p> <p>20 would probably say, not sure.</p> <p>21 Q When you were calling me a poor</p> <p>22 historian, about all you could say is, based on the</p> <p>23 information I gave you, my symptoms would be</p> <p>24 consistent with having had an arsine exposure,</p> <p>25 but you couldn't say whether that was the cause</p>	<p style="text-align: right;">Page 236</p> <p>1 THE WITNESS: I'm not sure as I sit here</p> <p>2 today. I would have to go and double-check the</p> <p>3 literature to be absolutely sure that there's</p> <p>4 nothing stated in the peer-reviewed literature to</p> <p>5 that effect.</p> <p>6 Q (BY MR. TUCKER) If you find such</p> <p>7 peer-reviewed literature, would you supply a copy</p> <p>8 of it to Counsel to supply to me?</p> <p>9 A Yes.</p> <p>10 MR. TUCKER: Would you like to have</p> <p>11 lunch?</p> <p>12 THE WITNESS: Yes.</p> <p>13 MR. TUCKER: Let's have lunch.</p> <p>14 (Lunch recess taken at 12:20 p.m.)</p> <p>15 (Deposition resumed at 1:25 P.M.)</p> <p>16 Q (BY MR. TUCKER) I'd like to ask you to</p> <p>17 look at Exhibit 8 if you would. Tell me what that</p> <p>18 is and how it came to be prepared.</p> <p>19 A This was sent to me by plaintiff counsel,</p> <p>20 and I don't know in what manner they prepared it.</p> <p>21 Q What does it purport to show?</p> <p>22 A It's a document entitled "Ingram versus</p> <p>23 Air Products, Clients with Hematuria (Blood in</p> <p>24 Urine)." There's 16 individuals listed by name,</p> <p>25 and then laboratory results, and location or</p>

33 (Pages 233 to 236)



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<p style="text-align: right;">Page 237</p> <p>1 employer.</p> <p>2 Q Laboratory results that are shown, can</p> <p>3 you tell me what those are?</p> <p>4 A These look like the results of urine</p> <p>5 dipsticks.</p> <p>6 Q Is there any further explanation of that?</p> <p>7 A Not on this chart, but by the</p> <p>8 nomenclature, it ranges from a trace to 4 plus.</p> <p>9 That would be the usual way that they would read</p> <p>10 off a urine dip.</p> <p>11 Q The information that is not contained on</p> <p>12 that chart is whether there was any further</p> <p>13 evaluation under the microscope, which you</p> <p>14 described to us in some detail earlier, correct?</p> <p>15 A Correct. This would either be due to</p> <p>16 hemoglobin in the urine, or it could be in the red</p> <p>17 blood cells.</p> <p>18 Q This is just a preliminary test?</p> <p>19 A Well, it's kind of a screening test.</p> <p>20 Q A screening test?</p> <p>21 A Yeah, that's correct.</p> <p>22 Q From that all you can tell is that you</p> <p>23 need to look further to determine whether you</p> <p>24 have hemoglobinuria, right?</p> <p>25 A Yes.</p>	<p style="text-align: right;">Page 239</p> <p>1 Q And the serum is contained?</p> <p>2 A It's a component of the blood. Blood is</p> <p>3 composed of the blood components, red/white</p> <p>4 cells, and platelets, and then you have the serum</p> <p>5 component.</p> <p>6 Q Does lipidemia interfere with the</p> <p>7 accuracy of a plasma free hemoglobin analysis?</p> <p>8 A I don't know. I think in one of the</p> <p>9 defense expert reports there's an allusion where</p> <p>10 there's a mention that that is in fact the case, but</p> <p>11 I haven't verified that.</p> <p>12 Q Was there a statement that the presence</p> <p>13 of -- what is the difference between lipidemia and</p> <p>14 hyperlipidemia?</p> <p>15 A It's the same. I mean, lipidemia is</p> <p>16 elevation of one of the blood lipids, which is</p> <p>17 cholesterol.</p> <p>18 Q Basically, fat in blood, isn't it?</p> <p>19 A It's an elevated fat in the blood, that's</p> <p>20 correct.</p> <p>21 Q And does that interfere with the way light</p> <p>22 would reflect or pass through blood?</p> <p>23 A Yes.</p> <p>24 Q Did you read that the -- I realize you</p> <p>25 didn't look it up yourself, but did you read in one</p>
<p style="text-align: right;">Page 238</p> <p>1 Q What laboratory procedure is used to</p> <p>2 measure plasma free hemoglobin?</p> <p>3 A I don't know. You mean -- by laboratory</p> <p>4 you mean what is the exact method used in the</p> <p>5 analytical lab?</p> <p>6 Q You told me how you determine whether</p> <p>7 you have hematuria or hemoglobinuria, right?</p> <p>8 A Correct.</p> <p>9 Q How do we determine what your plasma</p> <p>10 free hemoglobin level is?</p> <p>11 A I don't know how the labs do it.</p> <p>12 Q Do you know whether it's a chemical test,</p> <p>13 ora mechanical test, or a visual test?</p> <p>14 A I simply don't know. I don't want to</p> <p>15 answer. As I sit here today, I don't know. I could</p> <p>16 find out for you by looking at a lab manual. We</p> <p>17 have it, you know, on-line here. I could look up</p> <p>18 the answer for you by going to our clinical lab site</p> <p>19 here.</p> <p>20 Q What is lipidemia?</p> <p>21 A It's an elevated cholesterol or</p> <p>22 triglycerides.</p> <p>23 Q What does it actually mean, lipidemia?</p> <p>24 Elevated means -- where is it elevated?</p> <p>25 A It's elevated in the serum.</p>	<p style="text-align: right;">Page 240</p> <p>1 of the experts that were presented by Solkatronics</p> <p>2 that the determination of plasma free hemoglobin</p> <p>3 is a light-refraction test?</p> <p>4 A I don't recall.</p> <p>5 Q It's a light-sensitive test?</p> <p>6 A I don't recall reading that, but I'll take</p> <p>7 you at your word, that that's what one of the</p> <p>8 defense experts said.</p> <p>9 Q Did you make any effort to determine</p> <p>10 whether that was correct or not?</p> <p>11 A No.</p> <p>12 Q Were there any particular plaintiffs for</p> <p>13 whom -- if it does affect the results of a plasma</p> <p>14 free hemoglobin test, were there any particular of</p> <p>15 these 13 claimants who had hyperlipidemia or</p> <p>16 lipidemia?</p> <p>17 A I didn't see any results of their blood</p> <p>18 lipids. I think I commented in my second report</p> <p>19 that there's no evidence that any of the 13</p> <p>20 plaintiffs had hyperlipidemia. So if we want to</p> <p>21 attribute their elevated plasma hemoglobin --</p> <p>22 elevated free hemoglobins to hyperlipidemia, we</p> <p>23 would have to have evidence that they had</p> <p>24 hyperlipidemia that interfered with the result of</p> <p>25 the plasma free hemoglobin testing.</p>

34 (Pages 237 to 240)



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<p style="text-align: right;">Page 241</p> <p>1 Q Well --</p> <p>2 A I didn't see that.</p> <p>3 Q Is hyperlipidemia reflected by your LDH</p> <p>4 level?</p> <p>5 A I'm not sure if you meant LDH or LDL.</p> <p>6 LDH is one component of your cholesterol. Your</p> <p>7 LDH is another type of protein that comes from</p> <p>8 liver and bone, so that wouldn't have anything to</p> <p>9 do with your lipids.</p> <p>10 Q So you did not determine in looking at</p> <p>11 the records whether a particular person did or did</p> <p>12 not have hyperlipidemia?</p> <p>13 A I think it's speculative at this point</p> <p>14 without measuring their blood lipids. We just</p> <p>15 simply don't know. So I think one could not</p> <p>16 conclude that the elevated plasma hemoglobin was</p> <p>17 due to interference due to blood lipids unless we</p> <p>18 had a measurement of that.</p> <p>19 Q Were any of the 13 people that are on</p> <p>20 your list not present at the Port of Catoosa when</p> <p>21 the event occurred?</p> <p>22 A Not to my knowledge -- well, let me take</p> <p>23 that back. Let me verify that, because there . . .</p> <p>24 (Witness examines documents.)</p> <p>25 I want to be sure I get that right, because</p>	<p style="text-align: right;">Page 243</p> <p>1 A Logistically? You mean technically how</p> <p>2 did I review them?</p> <p>3 Q Let me rephrase the question.</p> <p>4 Did you read all of them?</p> <p>5 A Oh, yes, I did.</p> <p>6 Q Did you actually read them, or did you</p> <p>7 skim them?</p> <p>8 A I read them.</p> <p>9 Q Did you look at the laboratory results</p> <p>10 themselves as reported by the laboratory, or did</p> <p>11 you look at somebody else's report of those or</p> <p>12 summary of those?</p> <p>13 A I actually found the laboratory results,</p> <p>14 you know, in the medical records.</p> <p>15 Q So when you identified, for example,</p> <p>16 the gentleman with 111 percent, you took that from</p> <p>17 the laboratory record itself that was provided to</p> <p>18 you by plaintiffs' counsel?</p> <p>19 A Correct.</p> <p>20 Q I want to hand you a letter that was</p> <p>21 dated February 9, 2005 which was directed to me</p> <p>22 from plaintiffs' counsel's office. Not from Mr.</p> <p>23 Ward, who's with you, but from a woman in that</p> <p>24 office, a Ms. Steinberg, in which she is listing the</p> <p>25 things that she describes as having been the</p>
<p style="text-align: right;">Page 242</p> <p>1 there were different people exposed at -- in</p> <p>2 different areas. No, not to my knowledge. My</p> <p>3 answer would stand.</p> <p>4 Q The medical record summary that you</p> <p>5 prepared which we previously talked about which</p> <p>6 was attached to your report, this document?</p> <p>7 A Yes.</p> <p>8 Q You have a copy of that, don't you?</p> <p>9 A I do. I can't locate it right at this</p> <p>10 instant.</p> <p>11 Q Well, I'm not going to ask you about</p> <p>12 details of it right now. I just want to ask you</p> <p>13 generally did you prepare this?</p> <p>14 A Yes.</p> <p>15 Q And from what did you prepare it?</p> <p>16 A From their medical records. As I was</p> <p>17 going through each of their medical records I</p> <p>18 prepared this summary.</p> <p>19 Q Would you see if we can find Exhibit 9.</p> <p>20 These are yours.</p> <p>21 THE WITNESS: Are those yours or mine?</p> <p>22 MS. SMITH: Those are mine.</p> <p>23 THE WITNESS: Oh, those are yours.</p> <p>24 Q (BY MR. TUCKER) How did you review</p> <p>25 these 13 claimants' medical records?</p>	<p style="text-align: right;">Page 244</p> <p>1 information provided to our experts.</p> <p>2 Would you look at that list that's set</p> <p>3 forth in that letter and tell me if there's anything</p> <p>4 in there that you don't recognize.</p> <p>5 A (Witness examines document.)</p> <p>6 This is it. I recognize all those.</p> <p>7 Q I'd like you to look at your file and pull</p> <p>8 out number 11 for me, please.</p> <p>9 A I don't have it -- I'm not sure I know what</p> <p>10 that is or I have it with me here. I'll look, but</p> <p>11 that's -- I have a vague recollection.</p> <p>12 Q I thought we had your whole file with us</p> <p>13 here today.</p> <p>14 A I think we do, but I don't think I have the</p> <p>15 client summaries here.</p> <p>16 Q What do they look like?</p> <p>17 A I don't know. I mean, there must be some</p> <p>18 kind of summary of --</p> <p>19 MR. WARD: What number?</p> <p>20 THE WITNESS: Number 11.</p> <p>21 Must have summary information about the</p> <p>22 clients.</p> <p>23 Q (BY MR. TUCKER) Well, you see, my</p> <p>24 problem is that I asked you if you recognized</p> <p>25 those things and you said yes, I recognize them.</p>

35 (Pages 241 to 244)



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INGRAM v. AIR PRODUCTS

ROBERT HARRISON

June 22, 2005

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1 And that's why I'd like to have you look in the file
2 and see if you find them, because we looked and
3 can't match up anything that fit that description.

4 A I'll look again.

5 Q And you've represented to us, of course,
6 that this is your file.

7 A (Witness examines documents.)

8 I do apologize. It looks like I don't have
9 that, or I don't recognize it. I thought I did, but
10 apparently I don't.

11 Q Let me show you three pages that are
12 identified as arsine exposure summary.

13 Have you seen that before?

14 A I think so.

15 Q Where would those things be?

16 A I don't know. I will look in my office or
17 at home.

18 Q Is there another file that we -- that you
19 haven't presented to us?

20 A No.

21 Q That document that's in your hand that
22 you can't now find, is that something that you
23 have any knowledge of how it was prepared?

24 A No. It looks like -- I mean, I could
25 speculate, but I don't have any actual knowledge.

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1 and a half each, because I looked at them, oh, in
2 the day or two before my deposition started. So I
3 have a recollection of what they look like, but I
4 don't know where they are.

5 Q Also in that same paragraph would you
6 notice the reference made to research articles, in
7 that same first paragraph. I do not find any
8 research articles that were not contained in the
9 original packet.

10 Do you know what research articles that
11 refers to?

12 A No. I'm trying to remember whether those
13 research articles -- you know, I think -- I'm pretty
14 sure those research articles were redundancies
15 that were in these binders that were sent to me
16 originally. And I didn't keep them because they
17 were redundant. I don't think there was anything
18 else.

19 Q Well, if there was something else, that is
20 also missing; is that correct?

21 A Yes.

22 Q There also --

23 A Missing from the table here. Whether it's
24 permanently missing is another question.

25 Q There are also references in that letter to

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1 Q Do you know with certainty you've ever
2 even seen it before?

3 A I think I've seen something like that.
4 And I do apologize if it's gotten misplaced or it's
5 somewhere else in my office. If you saw my office,
6 you'd probably understand or appreciate --

7 Q Will you determine whether you have
8 those things; and if so, make copies of them and
9 furnish them to Counsel to give to us?

10 A Yes.

11 Q While you're doing that, would you also
12 either get me a copy of or the correct citation
13 sufficient for me to get the article by Dr. Raskin
14 and the article by Dr. Becker?

15 A Yes.

16 Q I also would like to hand you your draft
17 letter dated April 30, 2005 addressed to Mr. Fred
18 Stoops, a different attorney for the plaintiffs.

19 A Okay.

20 Q And as we looked through your file, I was
21 unable to locate the two affidavits you refer to
22 there, or declarations. Would you see if you could
23 find those, please.

24 A (Witness examines documents.)

25 I can't find them either. They are a page

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1 e-mails received from plaintiffs' counsel.

2 Do you notice that?

3 A Yeah. Those were two e-mails, March
4 29th and April 11th.

5 Q We did not find those in your file either.

6 A Those I can print out for you. I don't
7 have those printed out in my file. That I could
8 probably retrieve.

9 Q If you have the e-mails, since you got the
10 article as a PDF file, wouldn't the articles be
11 there too? You've either got the e-mail with the
12 attachment or you don't.

13 A Depends if the PDF attachment still
14 hangs on to my reply to the e-mail, because I
15 would have deleted the incoming e-mail but
16 probably acknowledged that I received it. So what
17 I'll do is I'll look to see whether those attachments
18 are still there.

19 Q Were there other e-mails back and forth
20 occasionally during the case?

21 A Probably.

22 Q Would you look for those too. I don't find
23 any of those in your file.

24 A Sure.

25 Q Doctor, can I ask you if we could just get

36 (Pages 245 to 248)



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<p style="text-align: right;">Page 249</p> <p>1 a separate piece of paper —</p> <p>2 A Because this is going to be marked?</p> <p>3 Q It's already an exhibit.</p> <p>4 A Okay.</p> <p>5 Q I'm sorry.</p> <p>6 Are you done?</p> <p>7 A Yeah.</p> <p>8 Q We were talking about your chart that</p> <p>9 you prepared, the summary, medical records</p> <p>10 summary.</p> <p>11 A (Witness nods head.)</p> <p>12 Q And had you reviewed Dr. Hastings'</p> <p>13 report before you did that?</p> <p>14 A I reviewed all the records in the order on</p> <p>15 the chart, including their medical file that was on</p> <p>16 the CD-ROM, where I think in two cases there were</p> <p>17 some hard copies of the medical records, and then</p> <p>18 Dr. Hastings' report. So all that was done for</p> <p>19 each of the plaintiffs.</p> <p>20 Q Did you take anything in your chart from</p> <p>21 Dr. Hastings' report?</p> <p>22 A His diagnosis that I listed in the table.</p> <p>23 Q Anything else?</p> <p>24 A No -- well, when you say did I take</p> <p>25 anything, clarify what you mean.</p>	<p style="text-align: right;">Page 251</p> <p>1 A Yes.</p> <p>2 Q Not consistent with, but caused by?</p> <p>3 A Yes.</p> <p>4 Q Would you look at your materials about</p> <p>5 Josh Hinton, whatever you would like to look at to</p> <p>6 talk about Josh Hinton.</p> <p>7 A All I have to look at without putting the</p> <p>8 CD-ROM up on the computer would be my summary</p> <p>9 table. I did not print out the medical records for</p> <p>10 each of these to look at in hard copy.</p> <p>11 Q Would you need to look at the whole</p> <p>12 medical record necessarily to give an opinion</p> <p>13 about Josh Hinton?</p> <p>14 A It depends what you ask me.</p> <p>15 Q Let me ask this: What did you rely on to</p> <p>16 form your opinion that Josh Hinton has acute</p> <p>17 arsine intoxication?</p> <p>18 A The symptoms reported on July 11th,</p> <p>19 2001, elevated plasma free hemoglobin.</p> <p>20 Q What is the objective data you have to</p> <p>21 support that opinion?</p> <p>22 A Plasma hemoglobin slightly increased,</p> <p>23 10.5 percent, upper limit of lab normal 10.4</p> <p>24 percent. Symptoms reported of headache, fatigue,</p> <p>25 shortness of breath and chest tightness. Those</p>
<p style="text-align: right;">Page 250</p> <p>1 Q Did you transfer any material from his</p> <p>2 report to your chart as opposed to finding that</p> <p>3 material yourself in the individual's medical</p> <p>4 record, not counting Dr. Hastings' report?</p> <p>5 A I'm sorry. I don't understand your</p> <p>6 question or the intent of your question.</p> <p>7 Q Well, Dr. Hastings' report contained, for</p> <p>8 example, statements about data that was obtained</p> <p>9 from individual claimants when they presented at</p> <p>10 the hospital following the event.</p> <p>11 Did you take material from his report</p> <p>12 that discussed that, or did you go to the source</p> <p>13 itself to get that?</p> <p>14 A Now I understand, thank you.</p> <p>15 No. I went to the source.</p> <p>16 Q In talking about Dr. Gad's report earlier</p> <p>17 today, you used the phrase pretty consistently in</p> <p>18 looking at those individuals that you found that</p> <p>19 you agreed with Dr. Gad that the symptoms they</p> <p>20 had were consistent with an exposure to arsine.</p> <p>21 Do you recall that?</p> <p>22 A Yes.</p> <p>23 Q Is it your testimony that the symptoms</p> <p>24 that -- of which they complain were caused by an</p> <p>25 exposure to arsine gas on July 11th, 2001?</p>	<p style="text-align: right;">Page 252</p> <p>1 symptoms are consistent with arsine exposure.</p> <p>2 Q So the objective finding that you have is</p> <p>3 the one-tenth of one percent elevation in plasma</p> <p>4 free hemoglobin; is that correct?</p> <p>5 A Yes.</p> <p>6 Q Was the medical facility that took the</p> <p>7 blood level from Josh Hinton concerned enough to</p> <p>8 take a follow-up blood level the next day, next</p> <p>9 week, or is that the only blood level you had?</p> <p>10 A It's the only blood level we have for</p> <p>11 plasma free hemoglobin.</p> <p>12 Q If a physician is concerned about</p> <p>13 exposure to something such as arsine and they</p> <p>14 find a one-tenth of one percent increase, that is to</p> <p>15 say that the report is 105 versus 104, if that were</p> <p>16 significant, would you not expect a retest?</p> <p>17 MR. WARD: Object to the form.</p> <p>18 THE WITNESS: If the elevation is mild</p> <p>19 and the doctor thinks that the person may be</p> <p>20 symptomatic but is not severe, a repeat -- the</p> <p>21 person would be observed in the emergency</p> <p>22 department or in the clinic, wherever they showed</p> <p>23 up. And if it appeared to the doctor that the</p> <p>24 person wasn't getting worse, they didn't have any</p> <p>25 more severe signs or symptoms, that person would</p>

37 (Pages 249 to 252)



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<p style="text-align: right;">Page 253</p> <p>1 be discharged, and a repeat plasma free 2 hemoglobin wouldn't be done. 3 Q (BY MR. TUCKER) If, for example, a 4 patient such as Josh Hinton were to have reported 5 to the doctor the symptoms that you've 6 described -- one of which was I think headache, 7 wasn't it? 8 A Yes. 9 Q Just generally feeling lousy, not any more 10 descriptive than that. 11 A Well, that's a little different than a 12 headache. 13 Q What else did he describe, you felt? 14 A Fatigue, shortness of breath, chest 15 tightness. 16 Q If that patient had reported that his -- he 17 had actually awakened with a headache that 18 morning, would that have any effect on your 19 evaluation of that patient? 20 A Well, if he woke up that morning with the 21 headache, that would be before the arsine release. 22 Q Yes. 23 A That might affect my evaluation. I'd want 24 to know how long that headache lasted, did the 25 headache he reported after the arsine release at</p>	<p style="text-align: right;">Page 255</p> <p>1 Do you know where Josh Hinton worked? 2 Is that on one of your maps? 3 A Yes. 4 Okay. One of these maps has him located 5 between Solkatronics and Air Exchangers. To the 6 northwest of Solkatronics. 7 Q Do you know whether he was working, 8 whether his job there was indoors or outdoors? 9 A I don't know. 10 Q Do you know where Josh Hinton was when 11 the release occurred, when the accident occurred? 12 A I'm assuming that he was -- you mean at 13 the exact time the release occurred? 14 I know on July 11th, 2001 he was 15 located -- on one of the maps it's between Air 16 Exchangers and Solkatronics, on another map it 17 looks like he's at Air Exchangers, but I don't know 18 his exact location, indoors, outdoors or precisely 19 over the course of that day. 20 Q Now, you didn't read Mr. Hinton's 21 deposition; is that correct? 22 A Correct. 23 Q If the testimony in this case is -- I ask 24 you to assume that Josh Hinton's job was he was 25 helping his father lay carpet in the offices of Air</p>
<p style="text-align: right;">Page 254</p> <p>1 Solkatronics differ from the headache that he 2 woke up with, was it different in character or 3 different in severity, what happened to the 4 headache. 5 Q If all those answers were that he woke up 6 with a headache and he had a headache, would 7 that tend to diminish your confidence in finding 8 that this man was suffering from an 9 arsine-exposure-related injury? 10 A When you say he woke up with a headache 11 and had a headache, you're posing a hypothetical 12 that he had no change in the quality, the location, 13 the severity or the frequency of his headache? 14 Q Reported to be the same. 15 A Well, I would need to know the answer to 16 those four characteristics, because they're all 17 important medically. 18 Q If it was reported in the records to be the 19 same -- 20 A Well, I want to know what you mean by 21 the same. I'd have to know -- just give me 22 the hypothetical. 23 Q Never mind. 24 A Severity, quality, frequency, location. 25 Q Let's add something else.</p>	<p style="text-align: right;">Page 256</p> <p>1 Exchangers, which is item number 5 on the map, 2 and that he had awakened feeling ill on the 3 morning of July 11th and had gone to work, as had 4 his father awakened feeling ill on July 11th, both 5 of them, and if they had both left the Port of 6 Catoosa before the accident occurred, would that 7 have any -- 8 MR. WARD: Object. That's totally 9 inconsistent with the affidavit he and his father 10 gave; and it assumes facts not even close to 11 correct in this case. 12 Q (BY MR. TUCKER) Assuming that to be 13 correct, would that influence your thought? 14 A Yes. 15 Q And how would it influence it? 16 A Well, if he wasn't anywhere close to 17 Solkatronics on the day of the arsine release, then 18 he couldn't have been exposed to arsine. 19 Q Can exposure to carpet adhesive cause 20 illness? 21 A It may. It can cause illness. 22 Q Can exposure to carpet adhesive cause 23 CNS problems? 24 A Central nervous system problems? 25 Q Yes.</p>

38 (Pages 253 to 256)



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<p style="text-align: right;">Page 257</p> <p>1 A Can cause headache or dizziness.</p> <p>2 Q In fact, you've testified to that before in</p> <p>3 other cases, haven't you?</p> <p>4 A Correct. Carpet adhesive contains</p> <p>5 solvents that can become airborne and cause</p> <p>6 central nervous system symptoms.</p> <p>7 Q Did you make a comparison between the</p> <p>8 symptoms reported by these 13 plaintiffs to their</p> <p>9 own family doctors as to what they did or didn't</p> <p>10 have wrong with them as opposed to what they told</p> <p>11 Dr. Hastings, the lawsuit doctor?</p> <p>12 A For many of them I had the emergency</p> <p>13 room records, and I had other records after the</p> <p>14 July 11th, 2001 arsine release. So to that extent</p> <p>15 where those records were available for me, yes.</p> <p>16 Q Were the descriptions of how they felt</p> <p>17 and their symptoms different when they talked to</p> <p>18 Dr. Hastings as opposed to when they talked to</p> <p>19 their own treating doctors?</p> <p>20 A Not that I could see. It's one of the</p> <p>21 things that I looked at specifically, recognizing</p> <p>22 that Dr. Hastings examines the person once.</p> <p>23 There is, youknow, an issue because these folks</p> <p>24 are in litigation, will they be exaggerating or</p> <p>25 magnifying or changing their history of symptoms.</p>	<p style="text-align: right;">Page 259</p> <p>1 be a student?</p> <p>2 A No.</p> <p>3 Q Did you know that he was a wrestling</p> <p>4 star?</p> <p>5 A No.</p> <p>6 Q Is wrestling the kind of sport, together</p> <p>7 with the kind of training you do for wrestling, that</p> <p>8 can periodically cause you to have blood in your</p> <p>9 urine?</p> <p>10 A Yes.</p> <p>11 Q Did you know he was a football star?</p> <p>12 A No.</p> <p>13 Q Is football one of those sports that</p> <p>14 occasionally, along with exercise and training, you</p> <p>15 could have blood in your urine?</p> <p>16 A It's possible. I mean, it depends on the</p> <p>17 degree of exertion and physical contact, when that</p> <p>18 trace blood is picked up in relationship to the</p> <p>19 physical activity. But, in general, what you're</p> <p>20 saying is that strenuous physical activity can</p> <p>21 cause some small amount of blood in the urine,</p> <p>22 and that's correct.</p> <p>23 Q Do you believe that Mr. Hinton has any</p> <p>24 continuing injury as a result of what you've</p> <p>25 described as exposure to arsine?</p>
<p style="text-align: right;">Page 258</p> <p>1 So it's important to look back at the medical</p> <p>2 records for precisely the reason that you ask.</p> <p>3 Q And did you do that?</p> <p>4 A I did.</p> <p>5 Q And --</p> <p>6 A In fact, I looked at the medical records,</p> <p>7 and then I looked at Dr. Hastings' report.</p> <p>8 Q Did you find any inconsistency in what</p> <p>9 these folks told Dr. Hastings or what he reported</p> <p>10 they told him and what they told their own</p> <p>11 doctors?</p> <p>12 A No. I thought they were pretty</p> <p>13 consistent. I didn't see much in the way of</p> <p>14 amplification or exaggeration, at least as reflected</p> <p>15 in Dr. Hastings' report.</p> <p>16 Q In Josh Hinton's medical record did you</p> <p>17 determine that historically he had had a trace of</p> <p>18 blood in his urine from time to time?</p> <p>19 A (Witness examines document.)</p> <p>20 Yes. I have a trace blood on January</p> <p>21 13th, 2003, which, of course, is about a year and</p> <p>22 a half later, but I do believe this has been a</p> <p>23 problem off and on over the years.</p> <p>24 Q Do you know what his avocation is, what</p> <p>25 his hobby is, or what he does at school other than</p>	<p style="text-align: right;">Page 260</p> <p>1 A (Witness examines document.)</p> <p>2 I don't have enough information to offer</p> <p>3 an opinion.</p> <p>4 Q Is one of Josh Hinton's symptoms memory</p> <p>5 loss?</p> <p>6 A Yes.</p> <p>7 Q Would you be surprised to find that Josh</p> <p>8 Hinton graduated from high school this year as a</p> <p>9 straight-A student in the honors section?</p> <p>10 A I'm not surprised one way or the other.</p> <p>11 Q With respect to his physical condition</p> <p>12 and the effect that something may have had on</p> <p>13 him on July 11th, 2001, would it affect your</p> <p>14 evaluation of his condition if you had learned that</p> <p>15 he is going to attend Oklahoma State University</p> <p>16 on a full football scholarship?</p> <p>17 A You're suggesting that there's something</p> <p>18 important or relevant about his football</p> <p>19 scholarship. I'm happy for him.</p> <p>20 Q They don't just hand those out to people</p> <p>21 that are hurt, do they?</p> <p>22 A Well, the type of injury I would be</p> <p>23 concerned about would be whether or not he has</p> <p>24 any central nervous system damage; and that</p> <p>25 would be manifested by headache or problems with</p>

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<p style="text-align: right;">Page 261</p> <p>1 his memory or trouble concentrating. It may or 2 may not be reflected in his grades or his ability to 3 get a football scholarship. 4 Q But you haven't read his deposition, 5 right? 6 A Correct. 7 Q Are you basing your opinion that Josh 8 Hinton suffered acute arsine intoxication on that 9 10.5 plasma hemoglobin level report? 10 A And his symptoms at the time. 11 Q Self-reported symptoms? 12 A Well, symptoms are by definition reported 13 by the patient. There's nothing wrong with 14 symptoms. So self-report relies on the validity 15 and the reliability of the individual. 16 Q Let's look at Charles Biddle. Take a 17 second to refresh your memory as to Charles 18 Biddle. 19 A Okay. For Mr. Biddle I have some of his 20 medical records here. The rest is on the CD-ROM. 21 Q Correct me if I'm wrong, but isn't one 22 of -- isn't Mr. Biddle one of the people that you 23 listed in connection with Dr. Gad's report that you 24 believe you didn't have sufficient information to 25 make a diagnosis?</p>	<p style="text-align: right;">Page 263</p> <p>1 just shows blood. 2 Are we talking about hematuria or 3 hemoglobinuria? 4 A His urine microscopic showed blood cells. 5 Sowe're talking about hematuria in his case. 6 Q Which is different than what you'd expect 7 to find as a consequence of red blood cell 8 destruction at the hands of arsine? 9 A Correct. 10 Q Do you know what Mr. Cardenas' 11 complaints were when he was admitted to the 12 hospital or when he went to the hospital? 13 (Ms. Smith exits the proceedings) 14 THE WITNESS: Headache, fatigue, 15 weakness, shortness of breath, memory loss. 16 Q (BY MR. TUCKER) What were his 17 complaints when he was released? 18 A I'd have to look at his medical records. 19 Q You did not note a follow-up blood test on 20 Mr. Cardenas a week later. 21 Do you recall reviewing that in his 22 records? 23 A I don't. If he had one, perhaps I missed 24 it and didn't see it in the medical records. 25 Q If he had one and it was -- everything was</p>
<p style="text-align: right;">Page 262</p> <p>1 A (Witness examines documents.) 2 That's correct. 3 Q No more with Mr. Biddle, then. Let's look 4 at Javier Cardenas. 5 A Okay. 6 Q Can you tell me where Mr. Cardenas was 7 employed. 8 A (Witness examines documents.) 9 Air Exchangers. 10 Q The lab data that you selected to write 11 down on Mr. Cardenas was that his haptoglobin 12 was in the normal range; is that right? 13 A Yes. 14 Q So his haptoglobin was not diminished? 15 A Correct. 16 Q You did not write down his hemoglobin. 17 His hemoglobin, or rather, his plasma 18 free hemoglobin level, was that not reported? 19 A I don't think it was done. 20 Q But, as you said, you can use haptoglobin 21 to reach the same conclusion, can't you? 22 A It's one of those tests that can be used to 23 look to see if there's intravascular hemolysis. 24 Q And your chart shows urinalysis plus 25 blood, but it does not show hemoglobinuria, it</p>	<p style="text-align: right;">Page 264</p> <p>1 perfectly normal, would you have included it in 2 the records? 3 A If it was one of the four types of tests for 4 the analysis of hemolysis, yes, I would have noted 5 it in my summary of the medical records, because 6 that's what I was looking for. 7 Q So if he had a complete blood count one 8 week later, you didn't -- 9 A I might have missed it. 10 Q You missed it? 11 MR. WARD: He didn't say he missed it. 12 He said he might have missed it. 13 Q (BY MR. TUCKER) Well, if he had it and 14 if it's not there, you're telling me you would not 15 have chosen to exclude it. Therefore, either you 16 didn't see it -- 17 A I didn't see it or it wasn't done. 18 Q -- or it wasn't there? 19 A Right. 20 (Ms. Smith re-enters the proceedings.) 21 Q (BY MR. TUCKER) Do you know whether 22 Mr. Cardenas smokes? 23 A I do not. 24 Q Do you know if -- 25 (Proceedings interrupted.)</p>

40 (Pages 261 to 264)



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<p style="text-align: right;">Page 265</p> <p>1 MR. TUCKER: Go ahead.</p> <p>2 THE WITNESS: Would you mind if I</p> <p>3 answered this?</p> <p>4 MR. TUCKER: Please.</p> <p>5 (Recess taken.)</p> <p>6 Q (BY MR. TUCKER) We were talking about</p> <p>7 Mr. Cardenas.</p> <p>8 A (Witness nods head.)</p> <p>9 Q If you were a long-term heavy smoker,</p> <p>10 can that cause CNS damage?</p> <p>11 A No.</p> <p>12 Q If you're a drinker, can that cause CNS</p> <p>13 damage?</p> <p>14 A If you're a heavy drinker over a long</p> <p>15 period of time, yes.</p> <p>16 Q Is that something you need to know in</p> <p>17 making a differential diagnosis of someone you</p> <p>18 think might have been exposed to something that</p> <p>19 would cause central nervous system symptoms?</p> <p>20 A Yes. I would need to know not for the</p> <p>21 acute symptoms but for long-term health effects if</p> <p>22 it involved the central nervous system.</p> <p>23 Q And with Mr. Cardenas, we know that the</p> <p>24 only laboratory records we have for him are that</p> <p>25 he was fine, right?</p>	<p style="text-align: right;">Page 267</p> <p>1 Q I'll rephrase it.</p> <p>2 Is there anything in his laboratory data</p> <p>3 that indicates an exposure to arsine?</p> <p>4 A The haptoglobin is normal.</p> <p>5 Q Well, I want you to answer the question I</p> <p>6 asked.</p> <p>7 A Okay. Whether or not he was exposed</p> <p>8 to arsine may depend on a combination of his</p> <p>9 symptoms, physical exam, laboratory data, and the</p> <p>10 other kinds of information that I outlined earlier.</p> <p>11 In this case the laboratory data is normal.</p> <p>12 Q Would you agree that nothing in Mr.</p> <p>13 Cardenas' laboratory data supports a diagnosis of</p> <p>14 exposure to arsine?</p> <p>15 A Again, no, I would not agree in the way</p> <p>16 that you phrased the question.</p> <p>17 Q Then tell me this: Point out to me what</p> <p>18 it is in the laboratory data for Javier Cardenas</p> <p>19 that supports a diagnosis of exposure to arsine.</p> <p>20 A The one test that was done, haptoglobin,</p> <p>21 is normal. That basically -- right. A normal</p> <p>22 haptoglobin does not support the diagnosis of</p> <p>23 absorption of arsine into the body, which is</p> <p>24 different from exposure. It just means that there</p> <p>25 wasn't sufficient arsine at the time the test was</p>
<p style="text-align: right;">Page 266</p> <p>1 MR. WARD: Object to the form.</p> <p>2 THE WITNESS: If by what you mean fine,</p> <p>3 he had normal haptoglobin --</p> <p>4 Q (BY MR. TUCKER) There's nothing in his</p> <p>5 records that indicates any exposure to arsine gas</p> <p>6 as far as any clinical findings or objective</p> <p>7 findings or laboratory findings.</p> <p>8 A He had symptoms consistent with known</p> <p>9 acute effects of arsine.</p> <p>10 Q You've told me that.</p> <p>11 But circling back around to the other side</p> <p>12 of the circle, as far as the laboratory data is</p> <p>13 concerned, that was which an independent person</p> <p>14 would look at and make a judgment from, there's</p> <p>15 nothing there that reflects any exposure to arsine,</p> <p>16 is there?</p> <p>17 A Haptoglobin was normal. Laboratory data</p> <p>18 is one element, one piece of the history</p> <p>19 information that I use in establishing causation.</p> <p>20 Q But just answer the question I asked you,</p> <p>21 Doctor. There's nothing in his laboratory data</p> <p>22 that indicates any exposure to arsine; is that</p> <p>23 correct?</p> <p>24 A Let me repeat that back and make sure I</p> <p>25 understand. There's nothing in --</p>	<p style="text-align: right;">Page 268</p> <p>1 taken in his body to affect the haptoglobin level.</p> <p>2 That's all it means.</p> <p>3 Q Does arsine have to be there at the time</p> <p>4 the test is taken? I thought the tests were a</p> <p>5 reaction to arsine you previously were exposed to.</p> <p>6 A Yeah. We just have to assume that the</p> <p>7 haptoglobin was taken at the appropriate time and</p> <p>8 that there wasn't sufficient enough arsine in his</p> <p>9 body to affect the haptoglobin.</p> <p>10 Q I'm trying to --</p> <p>11 A That's all it means.</p> <p>12 Q I'm trying to ask a real simple question.</p> <p>13 I'm not asking you to diagnose this man. I'm just</p> <p>14 asking you one piece of what you described as a</p> <p>15 puzzle with several parts.</p> <p>16 As to the one piece as to the laboratory</p> <p>17 data, does any laboratory data reported on Mr.</p> <p>18 Cardenas support a diagnosis of exposure to or</p> <p>19 response to arsine?</p> <p>20 MR. WARD: Object. Asked and</p> <p>21 answered.</p> <p>22 THE WITNESS: Okay. When you say --</p> <p>23 Q (BY MR. TUCKER) It's a yes or no</p> <p>24 question, Doctor.</p> <p>25 MR. WARD: You want it to be, but it</p>

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<p style="text-align: right;">Page 269</p> <p>1 doesn't have to be. 2 THE WITNESS: I'm not able to answer it 3 yes or no. 4 Q (BY MR. TUCKER) Why not? 5 A Because any laboratory data suggests 6 that any and all of the laboratory data you have 7 was even intended to diagnose arsine toxicity. 8 Q It doesn't matter if it was. The question 9 is does it? 10 A Okay. So if he had a -- if you have a 11 liver function test, which is an irrelevant test, 12 then the answer would be no, of course. 13 The only test he had was -- two tests he 14 had that were relevant was haptoglobin and a 15 urinalysis. Either of those tests indicate that he 16 had arsine in his body sufficient to cause 17 intravascular hemolysis and make that test 18 abnormal. That's as far as I can go. That's the 19 correct medical answer to your question. 20 Q That's fine. 21 Now, you have a listing of complaints 22 here for Mr. Cardenas under symptoms, correct? 23 A Yes. 24 Q Were you furnished a summary of his 25 wife's deposition or his wife's deposition?</p>	<p style="text-align: right;">Page 271</p> <p>1 MR. WARD: Object to the form of the 2 question. Are you talking about Dr. Hastings or 3 independent medical examiner -- 4 MR. TUCKER: Yes. 5 MR. WARD: -- as being the lawsuit 6 doctor? 7 MR. TUCKER: That's what he is. 8 MR. WARD: No. He's an independent 9 medical examiner. All right? 10 MR. TUCKER: Okay. 11 MR. WARD: So object to the form of the 12 question. 13 MR. TUCKER: Independent medical 14 lawsuit examiner. 15 Q Wouldn't you expect he would have 16 complained of a headache at home too? 17 A You have to repeat the question. I lost it 18 in the translation. 19 Q Well, you've got down here symptoms for 20 Cardenas as headache, right? 21 A Yes. 22 Q And you got that from someplace. 23 Where did you get that? 24 A From his medical records. 25 Q And would it surprise you that he never</p>
<p style="text-align: right;">Page 270</p> <p>1 A No. 2 Q Would you expect a person to make the 3 same complaints if they really truly had 4 symptoms, to make the same complaints someplace 5 other than to their litigation doctor? 6 A It depends. We all vary. Some of us 7 complain vociferously to our wives, friends 8 or partners, and some of us don't. So it really -- I 9 think in that case it really varies. 10 Q What is RAD? 11 A Reactive airways disease. 12 Q That means breathing difficulties? 13 A It's a particular kind of breathing 14 difficulty. It's similar to asthma. 15 Q Would it surprise you that the only 16 complaint that Mr. Cardenas made at home was 17 that he had shoulder pain? 18 A I don't know how to answer the question 19 when you say "surprised." I am not surprised. 20 It's just a fact. I would ask you to assume that 21 that's what he complained of, but I am not 22 surprised one way or the other. 23 Q If he reported symptoms to the lawsuit 24 doctor of headache, wouldn't you have expected 25 that he would report headache at home as well?</p>	<p style="text-align: right;">Page 272</p> <p>1 complains about headache at home? 2 A It would not surprise me. Again, people 3 vary in what they complain at home about. I look 4 at the medical records, the history offered either 5 to me or to the other doctors in the case; and 6 where it might be confirmed by family members or 7 friends or affidavits from other witnesses, that's 8 helpful, but if it's absent I don't make a great 9 deal about it. 10 Q I understand that you have had an 11 opportunity to review the minutes of the meeting at 12 the port held shortly after the July 11th release; 13 is that correct? 14 A That I have not? 15 Q You have. 16 A Can you be more specific and refresh my 17 memory as to exactly what you're referring to. 18 MS. SMITH: Exhibit 28. And I think it's 19 in here. 20 THE WITNESS: Okay. 21 Q (BY MR. TUCKER) 28. 22 A Oh, yes. Thank you. I have. 23 Q Did you read that as a part of your work 24 in this case? 25 A Yes.</p>

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1 Q Was that a meeting that was attended by
2 people who had been at the scene on July 11th of
3 2001?

4 A Yes.

5 Q Was this a meeting with people who had
6 employees that they either sent to the hospital or
7 were otherwise examined and tested following the
8 accident?

9 A (Witness examines document.)

10 Looks like there were some
11 representatives from some surrounding
12 businesses.

13 Q Is there any notation of any employees
14 that were not back to work?

15 MR. WARD: What kind of question was
16 that? If they weren't there, how would he know?
17 How would he know whether --

18 MR. TUCKER: Let me rephrase the
19 question.

20 Q Did anybody report whether or not their
21 employees who had been working on July 11th
22 were back to work following the incident? The
23 next day?

24 MR. WARD: I'm going to object. The
25 document speaks for itself.

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1 but fortunately no one had to be treated for arsine
2 exposure."

3 Q Is there anything you found in any of the
4 medical records you reviewed that indicated that
5 any hospital gave any treatment for arsine
6 exposure?

7 A Clarify what you mean by treatment. The
8 treatment for arsine exposure is blood
9 transfusion. So if that's what you mean, there
10 were no blood transfusions that were needed.

11 Q Okay.

12 May I see that, please.

13 A Yes.

14 Q Have you testified in the past that
15 litigation tends to make individuals less honest?

16 A I may have testified that it potentially
17 can, as I discussed here today. It's one of the
18 things that I consider, that there may be
19 exaggeration or magnification or frank dishonesty,
20 if you will. That's one of the things I always
21 consider.

22 Q To put it politely, would it be fair to say
23 that perceived opportunity for personal gain can
24 influence testimony?

25 A It may. That's correct.

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1 THE WITNESS: (Examines document.)

2 Okay. There are -- excuse me. There is
3 almost no discussion of the medical or health
4 effects and plans for follow-up treatment and/or
5 determining who is off and who is going back to
6 work.

7 The only statement in that regard is made
8 by Dan Regaby, who is a safety engineer at Air
9 Exchangers. And I'm quoting: "I would like to say
10 one thing. When it was all -- when it is all said
11 and done, we had 128 employees affected by this.
12 They are all home, healthy and planning on
13 coming back to work tomorrow." That's it.

14 Q (BY MR. TUCKER) Would you look at
15 page 2 of the report.

16 A Okay.

17 Q Do you note whether or not there's any
18 statement made about whether or not anybody had
19 been treated for arsine injury?

20 A It looks like Jaques Joseph, plant
21 manager at Solkatronics says -- and I'll quote --
22 "As you know, we had an arsine release which
23 went off site, and as a result of the incident a
24 number of our employees and neighbors went to
25 the hospital. They were admitted and examined,

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1 Q Is that one of the reasons that
2 particularly when you're trying to evaluate things
3 in a workers' compensation setting or any kind of
4 an industrial setting where you know
5 compensation will follow according to the law and
6 not because of any kind of negligence or anything
7 of that nature, is that one of the reasons that
8 particular emphasis is given in industrial
9 medicine to evaluation of the objective findings of
10 a person's complaints?

11 A Yes. But, you know, I have to add just,
12 you know, out of maybe your interest or potential
13 jury interest that when studies have been done of
14 the effect of litigation or workers' compensation
15 on disability or cost after an injury, the effects
16 are relatively minor and are generally pretty far
17 outweighed by the actual injury itself. It's not to
18 say there's not an effect, but it's typically not a
19 major one.

20 Q Let me ask you to look back at this
21 Exhibit No. 28, and I'll ask you to look at the list
22 of attendees at the meeting, see if you can identify
23 Mr. Tilly.

24 A Yes.

25 Q Who is Mr. Tilly?

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1 A He's identified as the director of the
2 Claremore, C-l-a-r-e-m-o-r-e, slash, Rogers
3 County Emergency Management Agency, I presume.
4 Q And he was in attendance at that meeting
5 on July 17th; is that correct?
6 A Yes.
7 Q I'll show you on page 7 here is Mr. Tilly.
8 And you've read this report; is that right?
9 A Yes.
10 Q And Mr. Tilly on page 7 is making kind of
11 a statement to the group; is that right?
12 A Yes.
13 Q Would you read for the record the
14 next-to-last paragraph of Mr. Tilly's report to the
15 group. Read that out loud.
16 A I just want to make sure I got the right
17 paragraph. The one that starts, "There was 101?"
18 Q Yes, sir.
19 A Quote, "There was 101 people in the
20 hospital at 10:00 to 11:00 p.m., and there were
21 probably 400 lawyers standing outside the door.
22 What does that tell you? And that is not fair to
23 Solkatronics and that is not fair to the port,"
24 unquote.
25 Q Is that just kind of a problem we have

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1 A Correct.
2 Q So would it be fair to say that you would
3 not have sufficient information to give any opinion
4 as to Mr. Cardenas' current condition?
5 A He currently complains of central nervous
6 system symptoms.
7 Q And current means what?
8 A At the time of the last medical record, or
9 Dr. Hastings' evaluation.
10 Q Can you tell me approximately when those
11 were?
12 A Not without looking at the medical
13 records.
14 Q So when I say current, I mean today, or
15 this month.
16 A Okay. None of these are today. I looked
17 at the medical records in -- I got the disk or the
18 CD-ROM in November or December of 2004. We're
19 now in June of 2005. So it goes without saying
20 that none of these are current absolutely as of
21 June 21st, 2005.
22 Q And as I understand, you do not have for
23 any of these people on this list of 13, other than
24 the maps that you shared with us today, where
25 these people were actually located at the time; is

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1 with society, Dr. Harrison?
2 A I don't think so.
3 Q You think that's unique to Tulsa,
4 Oklahoma?
5 A It's not unique, but I don't think it's a
6 problem in society.
7 Q Would you look back at Mr. Cardenas
8 again for me for a minute.
9 A Yes.
10 Q When you have symptoms written down
11 there, can you tell me as to what time those
12 symptoms are?
13 A I have to look back in his medical records
14 to look at the exact timing of his hospital visit.
15 Q Let me phrase it another way: Are these
16 symptoms from the hospital records or from
17 something else?
18 A These are a combination from the hospital
19 records and reported to other physicians or
20 reported to Dr. Hastings.
21 Q And from your summary, I gather you
22 can't identify which of those three possible
23 sources of complaint record it might be for any
24 given claimant without going back to their
25 records; is that right?

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1 that correct?
2 A Give me your definition of actually
3 located. I want to understand the question.
4 Q Well, they're identified specific to a
5 particular spot on that map, plant number 5,
6 plant number 22, plant number whatever.
7 A Correct.
8 Q But as to whether they were indoors or
9 outdoors, you have no knowledge as to that?
10 A Correct.
11 Q As to what activity they were involved in
12 doing, you have no idea as to that?
13 A That's in the medical record. I could tell
14 you that if I looked in the medical record.
15 Q As to what they did when they left their
16 place of work, you don't have that?
17 A What they did? I don't understand.
18 Q That is to say did they walk east? Did
19 they walk north? Did they walk south? How long
20 did they stay at the port? What did they do?
21 What are their opportunities for exposure or no
22 exposure?
23 A That's correct. I don't have that detailed
24 information.
25 Q You don't have the information about

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<p style="text-align: right;">Page 281</p> <p>1 their personal habits?</p> <p>2 A That's by and large in the medical</p> <p>3 records. So I have that.</p> <p>4 Q And you have some limited preexisting</p> <p>5 medical records, but not extensive?</p> <p>6 A We have to go case by case before I would</p> <p>7 agree with that term.</p> <p>8 Q You have for some, but not for others?</p> <p>9 A You know, we could pull up the CD-ROM</p> <p>10 and take a look and see exactly what I have. I</p> <p>11 don't want to make a generalization. That</p> <p>12 wouldn't be fair.</p> <p>13 Q Let's talk about Jennifer Shavers.</p> <p>14 As to Jennifer Shavers, you note that she</p> <p>15 was exposed prior to July 11, 2001.</p> <p>16 A Yes.</p> <p>17 Q And you also said in your report that her</p> <p>18 exposure was acute.</p> <p>19 On what facts do you base that</p> <p>20 statement?</p> <p>21 A What are you referring to?</p> <p>22 Q In your report with regard to Jennifer</p> <p>23 Shavers.</p> <p>24 A (Witness examines document.)</p> <p>25 I don't think I said that on Ms. Shavers.</p>	<p style="text-align: right;">Page 283</p> <p>1 anything prior to July 11th, 2001, wouldn't you</p> <p>2 expect others at Solkatronics to have had similar</p> <p>3 exposures?</p> <p>4 A It depends on what they did and where</p> <p>5 they were. I don't think I could make a</p> <p>6 generalization without more facts.</p> <p>7 Q If other releases occurred, they</p> <p>8 certainly wouldn't have originated in the office</p> <p>9 area, would they?</p> <p>10 A I would not expect exposures to originate</p> <p>11 in the office area. So her route of exposure would</p> <p>12 have to be through the general ventilation system</p> <p>13 or directly on the production floor or a release to</p> <p>14 which she was exposed out of doors, variety of</p> <p>15 different mechanisms are possible.</p> <p>16 Q And if the offices are in one building and</p> <p>17 the production is in another building, wouldn't</p> <p>18 you expect the people that would be in the area</p> <p>19 where the release occurred to have the most</p> <p>20 opportunity for response to arsine?</p> <p>21 A Depends on a great deal of other facts</p> <p>22 about the particular circumstances of exposure. I</p> <p>23 don't want to make a generalization without</p> <p>24 knowing more information.</p> <p>25 Q Are you willing to go as far as saying all</p>
<p style="text-align: right;">Page 282</p> <p>1 Q What did you say on Ms. Shavers?</p> <p>2 A That her central nervous system</p> <p>3 symptoms, headache, fatigue and memory loss, are</p> <p>4 consistent with the effects of arsine exposure.</p> <p>5 She was not exposed to arsine on the day of the</p> <p>6 release, July 11, 2001. She states that she was</p> <p>7 exposed prior to that time. And I don't have an</p> <p>8 opinion one way or the other about that issue at</p> <p>9 the moment.</p> <p>10 Q All right.</p> <p>11 Do you know where Ms. Shavers was</p> <p>12 employed at Solkatronics?</p> <p>13 A It's in her records. I don't recall as I sit</p> <p>14 here today.</p> <p>15 Q If I suggested to you it was in the office,</p> <p>16 would that refresh your recollection?</p> <p>17 A Yes.</p> <p>18 Q Would you expect that other persons</p> <p>19 would be located in the production areas of the</p> <p>20 facility?</p> <p>21 A You mean are there other employees in</p> <p>22 the production area?</p> <p>23 Q Yes.</p> <p>24 A Oh, yes, I'm sure there are.</p> <p>25 Q If Ms. Shavers had been exposed to</p>	<p style="text-align: right;">Page 284</p> <p>1 things otherwise equal, the person around where</p> <p>2 the gas is being worked with is more likely to have</p> <p>3 an exposure in the event of an event than someone</p> <p>4 who is located in another building in an office?</p> <p>5 A I don't want to say one way or the other.</p> <p>6 Production workers, for example, may take</p> <p>7 precautions. They may wear respirators, they may</p> <p>8 have evacuation procedures, they may be more</p> <p>9 knowledgeable because they've been trained. They</p> <p>10 may not be as inclined to report the same set of</p> <p>11 symptoms. There's a lot of variables.</p> <p>12 Q With respect to Ms. Shavers, we have</p> <p>13 absolutely no medical of any kind as far as blood</p> <p>14 work, do we, sir?</p> <p>15 A Correct. It wasn't done.</p> <p>16 Q Look at page 4 of your report, sir.</p> <p>17 A Page? What page did you say?</p> <p>18 Q 4.</p> <p>19 A Okay.</p> <p>20 Q I'm just trying to clarify something that's</p> <p>21 a little bit puzzling to me. Paragraph 3 of page 4,</p> <p>22 you state that the medical records show that all</p> <p>23 13 individuals, referring to these 13, had</p> <p>24 symptoms of acute arsine intoxication immediately</p> <p>25 following the July 11, 2001 incident. And you've</p>

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1 told me just a few minutes ago that you're not in a
2 position to say with respect to Mr. Biddle, who's
3 one of the 13, or now with respect to the lady that
4 was working in the office. Then if you recall
5 earlier today you told me that Mr. Schnitzer and
6 Mr. Guerra, you more or less agreed with Dr. Gad
7 there because they didn't go to the doctor and
8 there wasn't anything about them at the time.

9 A Well, I think I should, for clarity's
10 sake --

11 Q Do you see why I'm puzzled?

12 A I can understand why you're puzzled. I
13 think for clarity's sake I should insert "consistent
14 with" in the first sentence of number 3 on page 4
15 of my report.

16 So the medical records show that all 13
17 individuals had symptoms consistent with acute
18 arsine intoxication immediately following the July
19 11, 2001 incident. That I believe to be true.

20 Q That doesn't mean they had it, it just
21 means that the symptoms that they reported would
22 be the symptoms you'd expect if someone had been
23 exposed?

24 A Correct. Correct.

25 Q Then you go on in that paragraph to

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1 And no matter what the denominator is,
2 now, I suppose you could posit that there were 10
3 million people who were tested, and that would be
4 ludicrous, but, you know, I'm assuming that we're
5 on the order of three digits in terms of the number
6 of people that were examined. 19 is highly
7 significant.

8 Q You talk about --

9 A I would not expect any or but a few to
10 have elevated plasma hemoglobins due to
11 laboratory error.

12 Q Let me ask you a distinguishing question
13 here because you just used a term interchangeably
14 that I want to make certain can medically fairly be
15 used interchangeably.

16 Once you said high hemoglobin levels or
17 plasma free hemoglobin levels, and then you said
18 elevated plasma free hemoglobin levels.

19 A (Witness nods head.)

20 Q Are those terms -- is it correct to use
21 those interchangeably?

22 A I'm using them interchangeably.

23 Q Is it medically correct to do so?

24 A Yes. It's above the laboratory normal.
25 It's high.

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1 identify that only five had elevated plasma
2 hemoglobin.

3 A Yes. Well, I think five is highly
4 significant. Your use of the word only suggests
5 that it's minor.

6 Q How many people were tested?

7 MR. WARD: Of this 13, or of the 192?

8 Q (BY MR. TUCKER) Of the universe of
9 people who were treated at hospitals? Do you
10 know how many people were tested at hospitals or
11 at clinics as a consequence of that
12 contemporaneous with the event?

13 MR. WARD: Wait. I object to the term
14 contemporaneous with the event unless you define
15 it.

16 THE WITNESS: I don't know. And nor
17 would that make a difference. And the reason is
18 this: We know, first of all, that 19 had elevated
19 plasma hemoglobins. I'm assuming that the
20 summary table provided by the plaintiff attorney
21 is correct. Assuming that it is correct, there are
22 19 who have elevated plasma hemoglobins.

23 Q (BY MR. TUCKER) That's that sheet we
24 looked at that's tied to one of the maps?

25 A Yes.

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1 Q Is it medically correct to say that if
2 arsine is released in your vicinity and you have an
3 elevation of plasma free hemoglobin beyond the
4 normal laboratory range, just an elevation, for
5 example, one-tenth of a point, and you complain of
6 the self-reported symptoms that are consistent
7 with arsine exposure, is your testimony that that's
8 sufficient to make the diagnosis of arsine causing
9 injury to you?

10 A Let me ask if you can clarify your
11 question for me. Are you including in your
12 hypothetical that you only know of that one
13 person? Because that makes some difference.

14 Q Let's say that you have --

15 A Are you --

16 Q Let's say you have five out of 13.

17 A No, no. John Doe comes into the ER, has
18 a plasma free hemoglobin of 10.5, and has
19 symptoms consistent with the known effects of
20 arsine poisoning?

21 Q When you say has symptoms, you mean
22 reports symptoms.

23 A I don't want to quibble with your
24 nomenclature.

25 Symptoms are as reported by the patient.

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1 Q Please help me because when you say
2 have symptoms, that implies that a doctor -- and
3 people give extra credit to the doctor when the
4 doctor says somebody has something, they say,
5 really, but what you're saying when you say
6 symptoms is that the person is reporting that they
7 have something, and you're taking their word for
8 it for the purposes of your evaluation?

9 MR. WARD: Object to the form of the
10 question.

11 THE WITNESS: Okay. We're off on a
12 tangent here about the relevance or the
13 importance of symptoms.

14 Q (BY MR. TUCKER) They're very
15 important. I don't dispute that.

16 A They're critical.

17 Q Absolutely.

18 A They're essential, and they can be as
19 reliable as a physical finding or an objective
20 laboratory test.

21 Q Let's get back to where we were.

22 A Okay. So are you assuming in your
23 hypothetical that all I know is that John Doe came
24 in with a plasma free hemoglobin of 10.5 and
25 reports symptoms consistent with arsine, and I

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1 elevation over 10.4, isn't it?

2 A Yes.

3 Q And particularly when contrasted with
4 your 1.5, one and a half percent grams per
5 dekaliter, it's a very small number, isn't it?

6 A We have to clarify the -- we'll work on
7 clarifying the numbers.

8 Q The 1.5 grams per dekaliter is nowhere
9 near the normal range, is it, for plasma free
10 hemoglobin?

11 A Yeah. Let's -- we have to clarify the
12 units there.

13 Q 1.5 percent grams per dekaliter, is that
14 anywhere near a normal range of grams per
15 dekaliter for plasma free hemoglobin?

16 A You know, I don't want to answer that,
17 because I want to clarify the units. The 1.5
18 percent is what was published in the textbook;
19 and this lab is reporting 10.5 percent, which
20 doesn't make sense.

21 Q Why don't we get back to that in a little
22 bit, then. We'll save that.

23 A Okay, but in terms of a lab normal, 10.5
24 is only marginally above the 10.4.

25 Q So here's my question: Earlier I tried to

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1 know of no one else who showed up in the
2 emergency room or elsewhere in the vicinity?

3 Q And you know there was arsine in the
4 area.

5 A Yes. Is that your hypothetical, that there
6 was only one person?

7 Q Yes.

8 A If there was only one person and that's
9 all I knew, I may have a little bit less confidence
10 in that plasma free hemoglobin of 10.5 which is
11 only 0.1 percent over the lab upper limit of
12 normal, because it's so close, there's some
13 laboratory variability, there are some people who
14 have laboratory tests in the normal range when
15 their lab tests are at or very close to the upper
16 limit of normal. That's the hypothetical if I only
17 knew about one person.

18 Q Now --

19 A If I know about 18 other people who have
20 the same symptoms who also have elevated plasma
21 hemoglobins who are working in the same area as
22 John Doe, then my interpretation of John Doe's
23 plasma free hemoglobin is different.

24 Q Let me just make sure. Here's what I
25 want you to answer for me: 10.5 is a very small

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1 get you to give an answer with this, and you had
2 trouble with it. I wanted to see if you can do it
3 now that you've had time to think about it.

4 At what point above 10.5 that you begin
5 to think this is no longer -- I appreciate you use
6 the term interchangeably, but I submit to you I
7 don't think most people would, but at what point
8 does elevated reach the point that it's high enough
9 that it would make you think this person is having
10 a significant arsine reaction?

11 MR. WARD: Object to the form of the
12 question.

13 THE WITNESS: By significant do you
14 mean what -- at what point do I call the blood
15 bank and ask for packed red blood cells?

16 Q (BY MR. TUCKER) At what point do you
17 put down in the diagnosis that this man has a
18 response to an exposure of arsine?

19 A If I'm the doctor in the emergency room?

20 Q Yeah.

21 A I put down arsine intoxication when they
22 have signs or symptoms and/or a laboratory
23 abnormality.

24 Q So with a symptom reported of -- as
25 reported by, for example, Mr. Cardenas, okay,

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ROBERT HARRISON

June 22, 2005

<p style="text-align: right;">Page 293</p> <p>1 with --</p> <p>2 A He shows up in my emergency department</p> <p>3 with headache, shortness of breath?</p> <p>4 Q Headache and shortness of breath.</p> <p>5 A And he said he didn't have it that</p> <p>6 morning, and he's working at Air Exchangers?</p> <p>7 Q And there was arsine released down the</p> <p>8 road.</p> <p>9 A And he has a plasma free hemoglobin of</p> <p>10 10.5?</p> <p>11 Q Yes.</p> <p>12 A And I would put down on my emergency</p> <p>13 room record arsine toxicity. I might put it down</p> <p>14 arsine toxicity. I have now watched him for three</p> <p>15 hours. He's feeling better. And I'd write, follow</p> <p>16 up, you know, two weeks, see how he's doing.</p> <p>17 Q But your original note would have been</p> <p>18 arsine toxicity or arsine intoxication I believe you</p> <p>19 used the phrase earlier?</p> <p>20 A Correct.</p> <p>21 Q Did you find that in the medical records</p> <p>22 for any of the persons that were evaluated at the</p> <p>23 hospitals in Tulsa?</p> <p>24 A You know, I don't know what the</p> <p>25 diagnoses were that they used. I don't know what</p>	<p style="text-align: right;">Page 295</p> <p>1 Q Is there anything about Doug Ingram's</p> <p>2 laboratory results that would be consistent</p> <p>3 with exposure to arsine?</p> <p>4 A Mr. Ingram had a plasma free hemoglobin</p> <p>5 of 33 percent.</p> <p>6 Q Anything else?</p> <p>7 A He, as we mentioned earlier, had the drop</p> <p>8 in hemoglobin and then returned back. Although</p> <p>9 the hemoglobin was within the normal range</p> <p>10 throughout, there was a decrease.</p> <p>11 Q Look back for just a second to Mr.</p> <p>12 Cardenas and Mr. Guerra.</p> <p>13 A Okay.</p> <p>14 Q You tell me you didn't have enough to</p> <p>15 opine about Mr. Guerra, but about Mr. Cardenas</p> <p>16 you said you had enough to opine. As I look at</p> <p>17 his lab data, the only lab data you have is normal.</p> <p>18 A He had symptoms. He went and got</p> <p>19 treatment at the time, on the date of the incident.</p> <p>20 So we have information about his symptoms. On</p> <p>21 Guerra there's no medical there on the date of</p> <p>22 exposure.</p> <p>23 Q Okay.</p> <p>24 A As I recall, there wasn't much further</p> <p>25 medical.</p>
<p style="text-align: right;">Page 294</p> <p>1 the terminology was in the emergency</p> <p>2 departments.</p> <p>3 Q Do you recall reviewing any that said</p> <p>4 that?</p> <p>5 A You know, I don't want to say one way or</p> <p>6 the other, because I don't recall.</p> <p>7 Q Let's talk about Mr. Guerra, Obdulio</p> <p>8 Guerra.</p> <p>9 A "Guerra," I think it is, G-u-e-r-r-a.</p> <p>10 Q He pronounced it "Guerra," I think. I</p> <p>11 could be wrong.</p> <p>12 A Okay.</p> <p>13 Q And there you said you agreed with Dr.</p> <p>14 Gad.</p> <p>15 What did you agree with Dr. Gad about?</p> <p>16 A Acute symptoms are consistent with the</p> <p>17 known effects of arsine. No laboratory data was</p> <p>18 done on July 11, 2001.</p> <p>19 Q And so based upon that, Dr. Gad declined</p> <p>20 to opine about Obdulio Guerra; is that right?</p> <p>21 A Yes.</p> <p>22 Q And you concur with him?</p> <p>23 A I would need more information.</p> <p>24 Q Let's move to Doug Ingram.</p> <p>25 A Yes.</p>	<p style="text-align: right;">Page 296</p> <p>1 Q Go ahead and take Mr. Ingram.</p> <p>2 Do you know what Mr. Ingram's job duties</p> <p>3 were or where he worked?</p> <p>4 A Yes.</p> <p>5 (Witness examines documents.)</p> <p>6 He's an employee at Air Exchangers.</p> <p>7 Q Do you know what he did or what his</p> <p>8 duties were?</p> <p>9 A No.</p> <p>10 Q Do you know how big the Air Exchangers</p> <p>11 facility is?</p> <p>12 A No.</p> <p>13 Q Do you have any idea of the configuration</p> <p>14 of the buildings?</p> <p>15 A No.</p> <p>16 Q Do you know whether he worked in an</p> <p>17 office or on the production floor?</p> <p>18 A I do not.</p> <p>19 Q Do you know anything about what a</p> <p>20 welder does?</p> <p>21 A In general, yes. I don't know specifically</p> <p>22 what type of welding Mr. Ingram might have done,</p> <p>23 but I certainly know what a welder does.</p> <p>24 Q Does it matter what kind he does?</p> <p>25 A Not for this case.</p>

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1 Q If you work in an unair-conditioned
2 facility where the temperatures are in excess of a
3 hundred degrees and you're working in a large
4 metal building, and you're welding using customary
5 welding equipment and that's the person's job,
6 would it surprise you that that person reported
7 from time to time that they had a headache at
8 work?

9 A It's possible. I mean, the issue is is
10 there a change in the headache or other symptoms
11 that Mr. Ingram experienced after the arsine
12 exposure.

13 Q When you were asking me questions not
14 too long ago, you asked me a lot of questions
15 about my history.

16 Did you know the medical history for Mr.
17 Ingram?

18 A I'd have to pull up his medical records to
19 see how much I have before July 11th, 2001.

20 Q Would it be important to you if his
21 history of headaches began in 1997?

22 A That would depend on the frequency, the
23 intensity, the character, the duration of his
24 headaches, and how that might have changed after
25 July 11, 2001.

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1 Q What about if you add in previous
2 complaints of fatigue and inability to sleep?

3 A You know, again, same answer. Are
4 those --

5 Q Same kind of fatigue. Fatigue is fatigue,
6 isn't it?

7 A It's the intensity and it's the duration.
8 Was that a self-limited problem for which he
9 wastreated and that got completely better and is
10 now -- is there something different about the
11 quality or the character or the intensity of his
12 fatigue.

13 Q Do you know the extent to which Mr.
14 Ingram may or may not be overweight?

15 A I don't know.

16 Q Did you notice that in his medical
17 records?

18 A I did not.

19 Q Do you know the extent to which he has a
20 history of elevated blood pressure?

21 A I do not.

22 Q Can that be a factor in having headaches?

23

24 A It may be. It depends on the degree of
25 elevation.

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1 Q Would it be important to you that in 1999
2 he reported to his physician and was treated for
3 headaches three-week duration?

4 A I would need to know whether that was a
5 self-limited episode and whether the character,
6 the quality, the duration, the frequency, intensity
7 of his headaches changed.

8 Q And, again, May of 1999, same thing,
9 treated for headaches.

10 A Same answer. It's not unusual for
11 individuals to have headaches off and on
12 throughout their life. It's a very common
13 condition. The question is is it substantially
14 different as a result of exposure.

15 Q Again, if the records show in December of
16 2005 [sic] he was treated once again by a
17 physician, this time for headaches for six months'
18 duration --

19 A What was the time frame for that? I'm
20 sorry.

21 Q It's December of 2000.

22 A Okay. That would be the same answer.

23 Q And March of '01 he was treated again,
24 this time for headaches of three weeks.

25 A It would be the same answer.

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1 Q I notice a complaint made here of
2 shortness of breath.

3 Can overweight and high blood pressure
4 be involved in shortness of breath?

5 A Depends on the extent of the overweight.
6 Hypertension would not cause shortness of breath
7 unless it caused severe heart failure.

8 Q And the overweight, you didn't look at
9 that in his history, as I understand it?

10 A That's correct.

11 Q Did you determine that in 1999 he
12 actually had a medical sleep study to determine
13 why he couldn't sleep?

14 A Yes. That would be a sleep apnea study.

15 Q Did you know that?

16 A I think I saw that in his records.

17 Q And does a person that has a sleep apnea
18 problem often complain of fatigue?

19 A That is maybe one cause of fatigue, that's
20 correct.

21 Q Do you have any information that would
22 indicate that the headaches he complains of in
23 your summary, or the fatigue he complains of in
24 your summary is any different than the headaches
25 or fatigue of which he has previously complained

49 (Pages 297 to 300)



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INGRAM v. AIR PRODUCTS

ROBERT HARRISON

June 22, 2005

<p style="text-align: right;">Page 301</p> <p>1 before this incident?</p> <p>2 A You know, if there's more information and</p> <p>3 more detail about his previous medical condition</p> <p>4 that indicates that there hasn't been any change,</p> <p>5 my opinion would be altered. I don't have that</p> <p>6 information.</p> <p>7 Q Let me ask it another way: Let's assume</p> <p>8 that his medical records show that going back at</p> <p>9 least as far as 1999 he's complained of headache,</p> <p>10 headaches and fatigue.</p> <p>11 Do you have any information that would</p> <p>12 tell you that the headache and fatigue that he</p> <p>13 complained of that's reflected on your chart is a</p> <p>14 different headache or different fatigue than the</p> <p>15 one he's always complained about?</p> <p>16 A According to what he's told his doctors</p> <p>17 and Dr. Hastings, it's different, but if there is</p> <p>18 medical information to the contrary in the</p> <p>19 records, my opinion may change.</p> <p>20 Q How did he say it was different?</p> <p>21 A He dated it from the exposure to arsine,</p> <p>22 or he dated it from July 11, 2001. If it's</p> <p>23 changed -- if it's incorrect, if there's medical</p> <p>24 evidence in the records that the frequency,</p> <p>25 intensity, duration of any of these symptoms are</p>	<p style="text-align: right;">Page 303</p> <p>1 Q What would it be significant for?</p> <p>2 A Well, LDH is pretty nonspecific. So I</p> <p>3 don't actually put much stock. It can come from</p> <p>4 liver, blood, bone. There is a way of</p> <p>5 differentiating that, but it wasn't done. So it's</p> <p>6 potentially associated with exposure, but it's not</p> <p>7 one of the important tests to look at.</p> <p>8 Q Let's look at Dr. Kharas -- or not Dr.</p> <p>9 Kharas, Mr. Kharas.</p> <p>10 MR. WARD: Dr. Kharas.</p> <p>11 MR. TUCKER: Ph.D. Kharas.</p> <p>12 THE WITNESS: Would you mind if we</p> <p>13 took a five-minute break?</p> <p>14 MR. TUCKER: Not at all.</p> <p>15 (Recess taken.)</p> <p>16 Q (BY MR. TUCKER) Where did Karl Kharas</p> <p>17 work?</p> <p>18 A ASEC.</p> <p>19 Q Do you know where that is?</p> <p>20 A I could tell you.</p> <p>21 (Witness examines document.)</p> <p>22 To the northwest of Solkatronics, across</p> <p>23 Main Parkway.</p> <p>24 Q How far is that? Do you have any idea?</p> <p>25 A I don't. I don't have a scale to this map.</p>
<p style="text-align: right;">Page 302</p> <p>1 the same, then my opinion would change.</p> <p>2 Q Did he date it from that, or is that simply</p> <p>3 what was put down as when his symptoms were</p> <p>4 reported?</p> <p>5 A That's what he told his doctors.</p> <p>6 Q That he was fatigued and he had</p> <p>7 headaches; is that correct?</p> <p>8 A Correct. These are symptoms -- these are</p> <p>9 the reports from Mr. Ingram.</p> <p>10 Q Why do you note with respect to Mr.</p> <p>11 Ingram that he was given an arsenic test? Why is</p> <p>12 that significant to you?</p> <p>13 A I noted all the tests that were performed</p> <p>14 that were relevant to intravascular hemolysis. As</p> <p>15 I said earlier, varying tests were done on these</p> <p>16 individuals. So wherever there was one that was</p> <p>17 relevant, I noted it.</p> <p>18 Q And arsenic was not found; is that</p> <p>19 correct?</p> <p>20 A Correct.</p> <p>21 Q And what are you referring to when you</p> <p>22 have an LDH of 273?</p> <p>23 A Well, it was noted in the record as</p> <p>24 potentially significant by his treating doctor. So I</p> <p>25 put it here.</p>	<p style="text-align: right;">Page 304</p> <p>1 Q Do you know what he did at ASEC?</p> <p>2 A I don't remember. It's in the records.</p> <p>3 Q Do you know what chemicals he works</p> <p>4 with?</p> <p>5 A I don't.</p> <p>6 Q Do you know where he was in that facility</p> <p>7 at the time this incident occurred on July 11th,</p> <p>8 2001?</p> <p>9 A According to the map and key, he was at</p> <p>10 the main gate.</p> <p>11 Q Main gate of the plant?</p> <p>12 A I don't know.</p> <p>13 Q Do you know what main gate we're talking</p> <p>14 about?</p> <p>15 A No.</p> <p>16 Q Do you know whether Mr. Kharas travels</p> <p>17 out of the country quite a bit?</p> <p>18 A I do not.</p> <p>19 Q And you haven't read his deposition</p> <p>20 either?</p> <p>21 A I have not.</p> <p>22 Q As I look at your summary of Mr. Kharas,</p> <p>23 I see a haptoglobin level which is reported as</p> <p>24 normal.</p> <p>25 A Correct.</p>

50 (Pages 301 to 304)



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<p style="text-align: right;">Page 305</p> <p>1 Q And haptoglobin is the thing that goes 2 down when you have something happen within the 3 body that destroys the red blood cell; is that 4 right? 5 A Correct. 6 Q Does haptoglobin go down if your plasma 7 hemoglobin elevation is as a consequence of an 8 artifact? 9 A No. 10 Q So if Mr. Kharas' plasma hemoglobin 11 being elevated to 21.1 percent as opposed to 10.4 12 percent were from an artifact, then it would not be 13 unexpected for his haptoglobin to be in the normal 14 range, would it? 15 A Correct. 16 Q And is there any way that you can tell 17 whether or not Mr. Kharas' plasma free 18 hemoglobin count was an artifact? 19 A Yes. I think we can tell. I think we can 20 tell, because the plasma free hemoglobin is 21 elevated on multiple individuals in this case. So 22 we have to hypothesize that there's some common 23 artifactual problem in all 19. 24 Q Did that appear to be a level of plasma 25 free hemoglobin that concerned the treating</p>	<p style="text-align: right;">Page 307</p> <p>1 the only employee at ASEC. 2 Q Do you know how many people work at 3 ASEC? 4 A I do not. 5 Q Is the level that's reported on Mr. Kharas 6 of 21.1 percent — and I appreciate the fact that 7 we haven't really settled on what 21.1 percent 8 means, but is that level of 21.1 percent — 9 A Excuse me. We know it's above the 10 laboratory normal. 11 Q Okay. 12 Do we know whether that is sufficient 13 elevation of plasma hemoglobin to demonstrate 14 injury? 15 A Can you clarify what you mean by injury. 16 Q Injury enough to cause injury. 17 Does that indicate enough exposure to 18 arsine to cause injury to Mr. Kharas? 19 A It means that there has been some 20 toxicity to the — to the body, to one of the organs 21 of the body. In this case it's the blood-forming 22 elements, what we call the hematopoietic system. 23 So if we wanted to define injury as an end-organ 24 effect, yes, there's injury. 25 Q How about permanent injury?</p>
<p style="text-align: right;">Page 306</p> <p>1 physician in Tulsa, Oklahoma? 2 A It did not concern the treating physician 3 enough to treat with blood transfusions. 4 Q Did it concern the treating physician 5 enough to go back and retest the next day or later 6 that day or at some later time? 7 A It did not. The complete blood count was 8 normal. And I would have made the same 9 decision. So there's evidence of hemolysis, but 10 not enough to drop the hemoglobin or hematocrit. 11 I think it's a marker of exposure, but it's not 12 enough to institute treatment. 13 Q Is it enough to determine whether or not 14 that was an artifact or a true number by making a 15 second confirming test at a later time? 16 A Probably not. There would be no reason 17 to with a normal hematocrit and hemoglobin. If 18 the patient was observed and reported some 19 improvement, the patient could be discharged. 20 Q Do you have any information that anyone 21 else at the ASEC location had an elevated plasma 22 hemoglobin? 23 A I do not. To my knowledge, he's the only 24 one. I don't know if the information I have is 25 complete, but as far as it goes on Exhibit 4, he's</p>	<p style="text-align: right;">Page 308</p> <p>1 A So now if we want to move on to the 2 question of is there permanent injury as a result 3 of this acute exposure, that is does Mr. Kharas 4 have ongoing health problems as a result of the 5 acute exposure, he has headache, paresthesias, 6 which is numbness and tingling, and fatigue. 7 Those are central, and the paresthesias are 8 peripheral nervous system symptoms that is 9 consistent with toxicity or the effects from arsine 10 gas. 11 To confirm that, further diagnostic tests 12 would be useful, psychological tests to look at 13 brain injury, an EMG or nerve conduction studies 14 to look at peripheral nerve damage. 15 Q I'd like to go back to my real question, 16 which was is the elevation of plasma hemoglobin 17 21.1 percent when normal is reported as less than 18 10.4 percent, is that elevation sufficient to 19 demonstrate — is that elevation sufficient to 20 demonstrate to you that this person was exposed 21 to enough arsine to cause permanent injury? 22 A Yes. 23 MR. WARD: Objection. It's asked and 24 answered, but he's already answered the second 25 time.</p>

51 (Pages 305 to 308)



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<p style="text-align: right;">Page 309</p> <p>1 THE WITNESS: Yes. That elevation in 2 my opinion is sufficient to result in permanent 3 injury. 4 Q (BY MR. TUCKER) And the elevation that 5 we're talking about is an elevation of 6 approximately two times the upper range of 7 normal? 8 A Yes. 9 I believe that there's a variability in 10 response. If you have several hundred people who 11 are potentially exposed, there's going to be some 12 who are normal. Some will have some more severe 13 problems, and some may have intermediate or 14 minor problems. 15 Q Can you identify any peer-reviewed 16 literature that supports a conclusion that a 17 person who has been in the area of an arsine 18 release who has a single plasma hemoglobin report 19 approximately double the normal range, that that 20 is evidence of sufficient exposure to cause 21 permanent injury? 22 A I'm not aware, as I sit here today, of any 23 literature that specifically answers that question. 24 I'd be happy to take a look and see if I can dig up 25 something in the peer-reviewed literature that</p>	<p style="text-align: right;">Page 311</p> <p>1 peripheral and central nervous system effects 2 following acute arsine intoxication. 3 Q Out of those studies, how do you define 4 acute arsine intoxication? 5 A As I sit here today, I don't know enough 6 to cite you the diagnostic studies from those 7 articles in terms of how they defined acute arsine 8 intoxication. 9 You'd want to know, I think, was it a 10 plasma free hemoglobin or a hematocrit or 11 hemoglobin drop or haptoglobin drop or 12 hemoglobinuria, how do they define that. And 13 that would help in part to answer your question, 14 but there might be some other studies in the 15 case -- in the -- among the case reports of arsine 16 intoxication that have done longer-term follow-up 17 and tried to correlate them with the lab studies at 18 the beginning on the date of acute onset. 19 Q Paragraph 3, page 4 of your report, all 13 20 individuals, which I realize you qualified that 21 now, had symptoms of acute arsine intoxication. 22 What is your threshold level for acute 23 arsine intoxication with regard to plasma free 24 hemoglobin? 25 A Elevated above the lab, upper range of</p>
<p style="text-align: right;">Page 310</p> <p>1 answer that particular question. 2 Q Other than the one and a half percent, 3 which is a measurement of grams per dekaliter, 4 which is in your text and in your colleague's text, 5 is there any published peer-reviewed literature 6 that gives a threshold level of a plasma 7 hemoglobin elevation that says this demonstrates 8 arsine exposure or arsine injury? 9 A I can give you the same answer, and that 10 is that as I sit here today I cannot cite you a 11 specific reference that answers that particular 12 question, but I'd be happy to take a look to see if 13 there's, you know, a specific number or threshold 14 value of plasma free hemoglobin below which one 15 does not find permanent health effects and above 16 which one does. 17 Q Or is there peer-reviewed literature that 18 shows a threshold value that is a response to an 19 arsine exposure that causes injury to something 20 more than the red blood cells whose response was 21 just measured with the elevated level? 22 A It's the same answer. I mean, I think it's 23 a corollary to your question. There are -- 24 Q If -- 25 A There are studies that have found</p>	<p style="text-align: right;">Page 312</p> <p>1 lab normal. 2 Q One hundredth of a percent is plenty? 3 A With signs or symptoms consistent with 4 exposure, and fitting the pattern of symptoms 5 and signs, and laboratory abnormalities among the 6 population that were tested on that date. 7 Q Can you cite -- 8 A So basically -- excuse me -- we could 9 come up with a case definition on July 11th, 2001, 10 if I were a public health official, if I were the 11 county health officer and I was going to do a 12 survey to determine how many people had arsine 13 poisoning on July 11, 2001, and I collect all their 14 medical records, go around to the emergency 15 departments or give these people a questionnaire 16 and medical tests, I would have a case definition. 17 My case definition would be symptoms consistent 18 with acute arsine intoxication, or physical 19 examination findings, or laboratory abnormalities 20 among people who live within a certain area 21 around the site of the release. 22 All 13 of these people would meet a 23 minimum case definition in that they had 24 symptoms consistent with exposure, or they had 25 laboratory abnormalities.</p>

52 (Pages 309 to 312)



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1 Q If your threshold is any elevation above
2 laboratory values, can you cite one peer-reviewed
3 literature, report or text that makes that
4 statement?

5 MR. WARD: Object to the form of the
6 question. His criteria for what?

7 THE WITNESS: Yes. If you could clarify
8 your question. That makes a statement regarding
9 long-term health effects or the diagnosis of arsine
10 poisoning?

11 Q (BY MR. TUCKER) Diagnosis of arsine
12 poisoning.

13 A The diagnosis of arsine poisoning is made
14 on the basis of symptoms, signs and laboratory
15 abnormalities, and the laboratory abnormalities
16 include elevated plasma free hemoglobin. And one
17 can make that diagnosis on the basis of an
18 elevated plasma free hemoglobin alone.

19 Q Do you know --

20 A In the presence of normal values for
21 hemoglobinuria, hemoglobin, and haptoglobin.

22 Q As I understand what you're saying
23 previously, is that you are unaware of any medical
24 literature that's peer reviewed that states that any
25 elevation of plasma free hemoglobin, regardless of

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1 abnormalities.

2 And, in fact, I would argue that the
3 experts retained by the defendant in this case
4 have acknowledged as much.

5 Q Was your chapter on chemicals and gases
6 in which you made the statement that we
7 previously talked about that a history of arsine
8 exposure with a plasma hemoglobin level of
9 greater than 1.5 percent confirms the diagnosis of
10 arsine poisoning peer reviewed?

11 A It was reviewed by outside physicians,
12 but this is not a peer-reviewed medical journal in
13 the sense this is a periodic publication with an
14 editor. It's more -- it's similar more to a textbook.

15 Q But did it go through a process similar to
16 peer review? Was it reviewed by outside
17 physicians?

18 A It was reviewed by some outside
19 physicians to check for, you know, technical
20 accuracy, error and so forth.

21 Q I see.

22 We may quibble about the extent to which
23 it was reviewed, but this is reviewed by an outside
24 source prior to publication?

25 A Yes.

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1 the extent of it, and the presence of a complaint
2 by the patient, and an arsine event is sufficient to
3 have arsine poisoning?

4 A I didn't say that. Okay. I want to be
5 sure, because I really do think you're asking or
6 you're addressing two different issues.

7 Q Let me put --

8 A One issue is the diagnosis -- if I
9 may finish?

10 Q Go ahead.

11 A Because one issue is the diagnosis of
12 acute arsine poisoning, and what does the
13 peer-reviewed literature say about how to make
14 that diagnosis.

15 The other is chronic health effects from
16 any given degree of arsine poisoning or correlated
17 with a laboratory abnormality.

18 I was responding to the second issue in
19 terms of the peer-reviewed literature, specifically
20 regarding plasma free hemoglobin.

21 In regards to the first issue, how do you
22 diagnose arsine poisoning, there are peer-reviewed
23 articles on how to do that, which include the use
24 of the plasma free hemoglobin and elevated plasma
25 free hemoglobin alone in the absence of other

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1 Q Outside professionals who evaluated it to
2 determine if it was appropriate?

3 A Correct.

4 Q Did you have an opportunity to review Mr.
5 Kharas' deposition?

6 A No.

7 Q Do you know if he had a medical history
8 of headaches sufficient that a doctor prescribed
9 an MRI for him to try to evaluate his complaints of
10 headaches prior to July of 2001?

11 A I don't know.

12 Q It a man had headaches to the extent that
13 his physician prescribed an MRI, would you
14 consider that to be a fact you would have liked to
15 have had when you worked on this case?

16 A It would indicate potentially more severe
17 headaches, such that an MRI would be performed.

18 Q Did the records indicate that he had any
19 MRI performed as a result of any headaches of
20 which he complained after July 11th, 2001?

21 A Not to my knowledge.

22 Q Did the records reflect an MRI performed
23 on any of these 13 plaintiffs to evaluate their
24 headaches?

25 A Not to my knowledge.

53 (Pages 313 to 316)



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1 Q Do you know whether or not Mr. Kharas
2 was diagnosed prior to this event with
3 hypothyroidism?
4 A I don't know.
5 Q If a person has hypothyroidism, is fatigue
6 a symptom of that?
7 A If the hypothyroidism is not treated,
8 fatigue may be a symptom.
9 Q Memory loss?
10 A No.
11 Q Increased irritability?
12 A I don't think so.
13 Q Do you know whether in 1996 Mr. Kharas
14 was diagnosed with neuropathy of the hands and
15 wrists?
16 A I don't know.
17 Q If he's complaining of neuropathy after
18 the event and was evaluated and treated in August
19 of 1996 or evaluated for neuropathy in 1996,
20 that's not a new complaint, is it?
21 A If it was prior to July of 2001, that would
22 be a preexisting problem.
23 Q And he complained -- didn't you find one
24 of his complaints here was fatigue?
25 A Yes.

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1 important in terms of evaluating whether he was
2 injured by exposure. If these are preexisting
3 problems, I'd want to know if they were worse.
4 Q Anyway, you didn't even know he had
5 them, did you?
6 A I was not aware of these.
7 Q And if he told his doctor that he had been
8 to Russia five times since 2000 and his irritability
9 has continued to increase since he continued
10 making all these trips to Russia?
11 A I don't know. I don't know what that
12 means.
13 Q Can an exposure to lead or platinum
14 cause paresthesias?
15 A Lead if it's severe; exposure has to be
16 high.
17 Q What about platinum?
18 A Platinum does not cause
19 peripheral neuropathy.
20 Q Are you familiar with the components of
21 automotive catalysts?
22 A I know they're rare and expensive metals.
23 Q Do you know whether the materials that
24 are in automotive catalysts can cause
25 paresthesias?

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1 Q I have talked about headache. We've
2 talked about paresthesias. Let's talk about
3 fatigue.
4 Are you aware that in January of 2000 he
5 complained to his physician about decreased
6 energy?
7 A I don't know.
8 Q Would that be the same thing he's
9 complaining about on this form?
10 A Fatigue and decreased energy are similar.
11
12 Q And in September of 2000 -- this is less
13 than a year before this accident -- he complains to
14 his physician of continued fatigue and that he
15 works 12 hours a day.
16 Working 12 hours a day would probably
17 make you fatigued, wouldn't it?
18 A Possibly.
19 Q And at the same time he tells his doctor
20 he's working harder than he ever has in his life.
21 Would that have been good information
22 for you to have when you determined that Mr.
23 Kharas was suffering from symptoms caused by an
24 acute arsine exposure or acute arsine injury?
25 A These are issues that may or may not be

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1 A If you told me what they were, I could tell
2 you whether they cause peripheral neuropathy.
3 Q Do you know that Mr. Kharas' work puts
4 him in daily contact with the laboratory work
5 consistent with the manufacture of automotive
6 catalysts here and in Russia?
7 A I don't know; but, again, it would depend
8 on exactly what the metals were.
9 Q That would have been something that
10 would have been nice for you to know, wouldn't it?
11
12 A It may be important in terms of the
13 degree of exposure, how much potential he has to
14 absorb these metals and whether they can cause
15 nerve damage.
16 Q So it would have been nice to know as
17 you're trying to make a diagnosis as to whether
18 this man in fact was suffering from some exposure
19 to arsine or not?
20 A You know, again, as I indicated earlier
21 today, I asked about an occupational history and
22 other chemicals to which a person has been
23 exposed exactly for this reason.
24 Q If you assume a person has been exposed
25 to arsine and they remove their clothes and are

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<p style="text-align: right;">Page 321</p> <p>1 rinsed off, rinsed down, placed in a hospital gown, 2 then would you expect someone that came in 3 contact with that person to receive exposure to 4 sufficient arsine to receive any injury? 5 MR. WARD: Object to the form. 6 THE WITNESS: Are you saying that the 7 person has been washed down and is now in their 8 hospital gown and then somebody comes in contact 9 with them? 10 Q (BY MR. TUCKER) Yes. 11 A It would be unlikely that they would have 12 exposure to arsine at that point in time. 13 Q Would you look at Theresa Haggard, 14 please. 15 A Okay. 16 Q She complained of headache and fatigue. 17 Would that be the complaint she made at 18 the hospital? 19 A Yes. 20 Q And that she complained to the doctor 21 that saw her at the request of plaintiffs' attorneys 22 of fatigue and cephalgia? 23 A Correct. 24 Q Which is, what's that, headache? 25 A Another word for headache.</p>	<p style="text-align: right;">Page 323</p> <p>1 Q Those are the tests that you wrote down. 2 A Those were the only tests that were done. 3 If a hemoglobin -- if a urine test was done or a 4 plasma free hemoglobin was done, I would have 5 noted it; and they were not. 6 Q And just so we're clear, the only tests 7 that were taken were tests that simply reflect Ms. 8 Haggard was normal? 9 A Well, it doesn't necessarily mean Ms. 10 Haggard was normal, but it means that the tests 11 were within the normal range. 12 Q The haptoglobin is the marker that shows 13 you that plasma free hemoglobin exists in excess, 14 isn't it? Haptoglobin goes down when the plasma 15 free hemoglobin goes up? 16 A Well, that's interesting, and I don't want 17 to answer that one way or the other, because, as I 18 think you asked me earlier, is there a direct 19 correlation between the two, and I reserve 20 judgment on that until I look at the literature. 21 Q Let's look at specifically what we have. 22 The only lab data we have specifically on Ms. 23 Haggard is lab data that reports -- it's the data 24 that the hospital felt was sufficient enough to test 25 for.</p>
<p style="text-align: right;">Page 322</p> <p>1 Q And she got some -- the comments, these 2 are CNS symptoms c with the effects of arsine. 3 What is that? 4 A Consistent with. 5 Q That's because fatigue and headache goes 6 along with arsine? 7 A Correct. 8 Q Does it also go along with being 14 weeks 9 pregnant? 10 A It may. 11 Q Are we fortunate enough to have any 12 laboratory data contemporaneous with the event? 13 A She had a hemoglobin and haptoglobin 14 level. 15 Q What do those numbers tell us? 16 A The haptoglobin was normal. The 17 hemoglobin was slightly low, but was still within 18 the normal range. 19 Q So the haptoglobin and hemoglobin were 20 both normal? 21 A Within the normal range, that's correct. 22 Q So we have no laboratory indication of 23 any abnormality for Ms. Haggard; is that right? 24 A In terms of the two tests that were done, 25 that's correct.</p>	<p style="text-align: right;">Page 324</p> <p>1 Their tests all come back normal; is that 2 right? 3 A The two tests that they did came back 4 normal. 5 Every hospital did something different. 6 There wasn't a standard protocol. In other words, 7 everyone didn't come in and everybody didn't get a 8 plasma free hemoglobin and a haptoglobin and a 9 hemoglobin and a urine dip. Everybody got 10 something a little different. 11 Q Did Ms. Haggard have a urine dip? 12 A No. 13 Q She did not, or did not have any 14 abnormality in her urine dip? 15 A I could not find a urine dip. If it was 16 normal -- if it was done and normal, I noted it. 17 Q Did you receive the records from an 18 organization called Work-Med? 19 A I don't remember. 20 Q Do you know what Work-Med is? 21 A No. 22 Q Let me represent to you, Doctor, that 23 Work-Med is a facility there at the Port of 24 Catoosa. It's kind of an on-site medical station. 25 Let me represent to you that before presenting for</p>

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1 her bloodtest, Ms. Haggard presented herself at
2 Work-Med and received a urine test, and that she
3 did in fact have a urine test -- it would have been
4 in her medical records that you should have -- and
5 that that urine dip was negative.

6 Is that something you would normally
7 have noted but just didn't?

8 A If I had the records from Work-Med and
9 they did a urine dip and it was negative and I saw
10 it, I would have put it down here.

11 Q It's possible you missed it?

12 A I either missed it or I didn't have the
13 records.

14 Q Okay.

15 A Let me be clear, I wasn't selectively
16 putting down lab tests. I put down everything I
17 could find.

18 Q With respect to Ms. Haggard, you have
19 diagnosed that she had acute arsine intoxication.

20 A Correct.

21 Q Or are you saying that? Are you just
22 simply saying that she's reporting symptoms of
23 acute arsine intoxication?

24 A She had symptoms consistent with acute
25 arsine intoxication.

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1 nausea, their history was clear, or that they
2 didn't have it before, it was of sudden onset or
3 acute onset, and they showed up in an emergency
4 department and I checked their blood for
5 haptoglobin and it was normal, let's say,
6 hypothetically, it's this case, I would say, this is
7 a case that would fit into my case definition for
8 arsine exposure on July 11th, 2001, but not
9 sufficient to cause intravascular hemolysis to
10 change the haptoglobin.

11 Q And if the intravascular hemolysis is
12 insufficient to change the haptoglobin, is the
13 hemolysis that occurs sufficient to cause any
14 injury?

15 A Well, that's the second question. That's
16 what I'm arguing, is I think just to be sure we're
17 not confusing the two issues, somebody can have
18 arsine intoxication and no subsequent injury.

19 Q Intoxication really means --

20 A And somebody can have poisoning, again,
21 symptoms or laboratory abnormalities and a whole
22 range of effects ranging from two days later
23 they're fine or two years later they still have a
24 headache or severe headaches, or they have
25 peripheral neuropathy, and it dates from

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1 Q But didn't she also have symptoms --
2 MR. WARD: He hasn't finished his
3 answer.

4 THE WITNESS: I'm through, yeah.

5 Q (BY MR. TUCKER) But didn't she have
6 medical results that are completely inconsistent
7 with arsine intoxication?

8 A What are you referring to? Her
9 haptoglobin and hemoglobin?

10 Q Yes, sir.

11 A Those medical results indicate that there
12 was not intravascular hemolysis to cause these
13 results to be abnormal.

14 Q So that is inconsistent with a diagnosis
15 of exposure to arsine, is it not?

16 A Well, let's go back to on July 11th, 2001,
17 what is our case definition? My case definition
18 would be signs, symptoms or laboratory
19 abnormalities.

20 Q Either one?

21 A Or some combination of them.

22 Q But either one is sufficient for your case
23 diagnosis?

24 A For my diagnosis if somebody came in and
25 told me they had a headache or were dizzy,

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1 exposure.

2 So my belief is that there's a spectrum
3 that are consequent to an exposure of arsine, and
4 I think you asked in the absence of an abnormal
5 hemoglobin, can you have chronic health effects.

6 MR. TUCKER: Let's take a minute.

7 THE WITNESS: Okay.

8 (Recess taken.)

9 (Ms. Smith exits the proceedings.)

10 Q (BY MR. TUCKER) We were at Bart
11 Schnitzer. Can you tell me where Mr. Schnitzer
12 works.

13 A I can, but I have to look it up.

14 Mr. Schnitzer works at Tuloma
15 Stevedoring, T-u-l-o-m-a.

16 Q That would be Tuloma as in Tulsa,
17 Oklahoma, Tuloma.

18 A No kidding? Tuloma.

19 Q Which direction is that?

20 A East of Solkatronics.

21 Q How far away is that from Solkatronics?

22 A I don't know the distance. I don't have a
23 scale on my map here. It's further than ASEC or
24 Air Exchangers.

25 Q If you were comparing it to the distance

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<p>1 of Air Exchangers, it's further by a factor of how 2 many? 3 A Oh, it looks like, I would say, about five 4 times as far. 5 Q Five times further away? 6 A Correct. 7 Q And with respect to Mr. Schnitzer, 8 you've already told us that you do not believe -- 9 his kidney issues do not have anything to do with 10 the arsine event of July of 2001. 11 A Correct. 12 Q With regard to Mr. Schnitzer, do you find 13 any blood results that would confirm a diagnosis 14 of exposure to arsine? 15 (Ms. Smith re-enters the proceedings.) 16 THE WITNESS: Mr. Schnitzer, as far as I 17 can tell from his records, did not have any testing 18 done on July 11, 2001. 19 Q (BY MR. TUCKER) When was he tested? 20 A Oh, looks like it was a urine test in 21 December of 1997, and then when he had his 22 kidney failure in February of 2002. 23 Q So is there any laboratory evidence that 24 would permit confirmation of a diagnosis of 25 exposure to or injury from arsine exposure in July</p>	<p>1 evacuated, where he went, you probably wouldn't 2 have that information, would you? 3 A I do not. 4 Q Have you read Mr. Miller's deposition? 5 A No. 6 Q And had you read Mr. Schnitzer's 7 deposition? 8 A No. 9 Q Are we fortunate to have blood results on 10 Mr. Miller that's contemporary with the event? 11 A We have blood tests on the day of the 12 incident. 13 Q What do those blood tests tell us? 14 A The haptoglobin was normal. The urine 15 arsenic was normal. And the hemoglobin was 16 within the normal range, although it was repeated 17 twice, and increased from the first to the second 18 test. 19 Q But it never got out of the normal range; 20 is that right? 21 A That's correct. 22 Q And did he have a urinalysis? 23 A He did. 24 Q Would it be -- would it be fair to 25 conclude, sir, looking at the laboratory tests that</p>
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<p>1 of 2001? 2 A There were no lab tests done in July of 3 2001. 4 Q Since Mr. Schnitzer was not examined or 5 evaluated or tested at the time of the event, and 6 did not see a physician for evaluation until 7 February of 2002, on what do you base your 8 opinion that Mr. Schnitzer had acute arsine 9 intoxication? 10 A The symptoms that he reported. 11 Q Anything else? 12 A No. 13 Q Please look at Allen Miller. 14 A Okay. 15 Q Do you know where Mr. Miller worked? 16 A He was another Air Exchangers employee. 17 Q And do you know what his duties were? 18 A No. 19 Q Do you know whether he worked in the 20 office or in the shop? 21 A I do not. 22 Q Do you know whether he left his point of 23 employment at any time following the accident? 24 A I do not. 25 Q So I guess if I were to ask you if he</p>	<p>1 were performed on Mr. Miller consistent with the 2 day of the event, nothing about those laboratory 3 tests indicates arsine poisoning? 4 A Well, it depends what we want to make of 5 the hemoglobin change from 13.3 to 14.6, whether 6 they want to consider that indicative of an arsine 7 effect on the blood. 8 Q You previously told us the dose makes the 9 poison, right? 10 A Well, the dose -- well, I actually didn't 11 ever say the dose makes the poison. 12 Q Do you disagree with that? 13 A I would agree that there's generally a 14 dose-response relationship for many but not all 15 chemicals. There are many chemicals for which 16 there is not a dose-response relationship, but 17 many chemicals for which there are. 18 Q How about arsine? 19 A There is a dose-response relationship, 20 but within that dose response is also an 21 individual variability. So it's not as simple as 22 just saying the dose makes the poison. 23 Q Now, when you say arsine poisoning, is 24 the fact that Mr. Miller's hemoglobin was reported 25 at two different levels on two different tests, all of</p>

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<p style="text-align: right;">Page 333</p> <p>1 which were clearly within the normal range, are</p> <p>2 you saying that that's evidence of arsine</p> <p>3 poisoning?</p> <p>4 A Possibly. I mean, that is one way to look</p> <p>5 at that. It's suggestive. I don't think it's</p> <p>6 absolutely diagnostic.</p> <p>7 Q Do you have any laboratory tests that</p> <p>8 would indicate anything abnormal?</p> <p>9 A All of the lab tests are in the normal</p> <p>10 range, but it's -- one way to interpret that change</p> <p>11 in hemoglobin along with the symptoms he</p> <p>12 reported on that date is some effect of arsine.</p> <p>13 Q If you were to take anybody's hemoglobin</p> <p>14 level as we sit here now at 4:15 in the afternoon</p> <p>15 in San Francisco, California in your hospital, and</p> <p>16 then we were to take it again at midnight, and</p> <p>17 again tomorrow at 4 o'clock, would you expect all</p> <p>18 three of those results to be the same?</p> <p>19 A We would expect them to be close. So</p> <p>20 that's the question, is this just some normal</p> <p>21 variability in hemoglobin tests.</p> <p>22 Q What is the normal variability in</p> <p>23 hemoglobin tests?</p> <p>24 A It is slight in its variability, and it</p> <p>25 depends largely on the hydration state. In other</p>	<p style="text-align: right;">Page 335</p> <p>1 Q Were you aware that in 1996 he had a</p> <p>2 motor vehicle accident with head trauma, and has</p> <p>3 experienced headaches off and on since that time?</p> <p>4 A I was not aware of that.</p> <p>5 Q Would that have been a good thing you</p> <p>6 would have liked to have known?</p> <p>7 A It's a pertinent fact in terms of</p> <p>8 evaluating the onset of headaches and any change</p> <p>9 in those, compared with headaches he had prior to</p> <p>10 the exposure.</p> <p>11 Q And were you aware that here he's</p> <p>12 reporting fatigue? Do you know whether or not he</p> <p>13 smokes?</p> <p>14 A I do not.</p> <p>15 Q Does a heavy smoker get fatigue</p> <p>16 sometimes?</p> <p>17 A Smoking itself wouldn't cause fatigue.</p> <p>18 There would have to be secondary medical</p> <p>19 problems from smoking.</p> <p>20 Q The consequences of smoking can cause</p> <p>21 fatigue, though, can't they?</p> <p>22 A If you had severe obstructive lung</p> <p>23 disease, that could cause fatigue.</p> <p>24 Q His history also reports that in 1997 he</p> <p>25 had a response to mold exposure.</p>
<p style="text-align: right;">Page 334</p> <p>1 words, how well hydrated you are. If he was less</p> <p>2 hydrated, that is if he was more dehydrated</p> <p>3 between the first and the second test, the</p> <p>4 hemoglobin count would go up.</p> <p>5 So one possible explanation for this is</p> <p>6 that he somehow got dehydrated in the hospital.</p> <p>7 It's not very likely. Usually it goes the other way,</p> <p>8 you're hydrated in the hospital.</p> <p>9 Q Just so we're clear, the test results were</p> <p>10 all in the normal range?</p> <p>11 A Yes, that's correct. They're in the normal</p> <p>12 range.</p> <p>13 Q I don't note here on your chart the fact</p> <p>14 that he was diagnosed in the medical records as</p> <p>15 having arrived at the hospital with a sunburn.</p> <p>16 A I don't remember that. I may not have</p> <p>17 noted it because I didn't consider it significant.</p> <p>18 Q Did you have an opportunity to look at</p> <p>19 his medical history?</p> <p>20 A Yes.</p> <p>21 Q Did you find anything significant in that</p> <p>22 medical history?</p> <p>23 A In terms of his past medical history?</p> <p>24 Q Yes.</p> <p>25 A No, I did not.</p>	<p style="text-align: right;">Page 336</p> <p>1 Did you know that?</p> <p>2 A No.</p> <p>3 Q With that added to his history, and the</p> <p>4 fact that his laboratory results were all normal,</p> <p>5 do you still contend his differential diagnosis --</p> <p>6 or did you make a differential diagnoses on him?</p> <p>7 A I considered that his symptoms at the</p> <p>8 time of exposure were consistent with the effects</p> <p>9 of arsine exposure or arsine poisoning.</p> <p>10 Q Every time you've used the phrase</p> <p>11 "consistent with," are you intending that that may</p> <p>12 be used interchangeably with the phrase "caused</p> <p>13 by"?</p> <p>14 A At the time of acute exposure, at the time</p> <p>15 of the incident Mr. Miller reports headache that</p> <p>16 is, I think, caused by exposure to arsine. Unless</p> <p>17 it can beshown by these additional facts that you</p> <p>18 have posited to me or, you know, medical elements</p> <p>19 that may be present in his past medical history,</p> <p>20 unless more information comes to light, I think</p> <p>21 that's caused by exposure to arsine.</p> <p>22 Q Then the Hastings diagnosis shown in</p> <p>23 your chart of fatigue, headache and depression.</p> <p>24 You say that those continuing complaints are</p> <p>25 consistent with exposure to arsine in July of</p>

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<p>1 2001, which exposure is not sufficient to cause 2 any reaction in the blood beyond normal ranges? 3 A Okay. I think I'd like to answer your 4 question, but I think it's then worth clarifying, 5 that there are acute symptoms of arsine poisoning 6 at the time of exposure on July 11, 2001. Then 7 there were ongoing complaints at the time of Dr. 8 Hastings' examination. 9 And I think it's important to distinguish 10 between those two. And my opinion is different. 11 At the time of acute exposure, Mr. Miller's 12 headaches are caused by exposure, unless there 13 are other factors that I'm not aware of that would 14 change that opinion after review of additional 15 medical records. His symptoms now would require 16 additional diagnostic studies. 17 Q Were those performed? 18 A Not to my knowledge. 19 Q With respect to the headache at the time 20 of the event, aren't the headaches that result from 21 arsine a consequence of the hemolysis that arsine 22 causes? 23 A We don't know that for sure. 24 Q Have you read that in the medical 25 literature?</p>	<p>1 Q How far was that, relative to how far Air 2 Exchangers is? 3 A It looks like it's about the same distance 4 away from Solkatronics. 5 Q Which direction? 6 A North. 7 Q Did Ms. Castro have any blood tests that 8 demonstrated exposure to arsine? 9 A Ms. Castro had a urine test and a blood 10 count. Those were done on July 14th, 2001, three 11 days after the arsine release. Both of those tests 12 were normal. 13 Q Is there any test for Ms. Castro that 14 demonstrates any abnormal value? 15 A Those were the only two tests that were 16 done that were relevant to arsine exposure; and 17 both of those were normal. 18 Q Did she miss any work? 19 A I don't know. 20 Q Did you review her deposition? 21 A No. 22 Q Please look at Mr. Patton. 23 A Okay. 24 Q Where was Mr. Patton located? 25 A (Witness examines document.)</p>
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<p>1 A I have not. The central nervous system 2 effects are not necessarily the consequence of just 3 the intravascular hemolysis. 4 Q Does hemolysis result in headache? 5 A Not necessarily. 6 Q Does it result in headache? Not always, 7 but does it result in headache? 8 A It may. 9 Q When we took a break a little bit ago and 10 you and Mr. Ward visited, what did you-all visit 11 about? 12 A I discussed with him where we were in 13 terms of a deposition today, timewise, that I was 14 probably becoming repetitious to you and/or 15 myself. 16 Q Anything other than time? 17 A No. 18 Q Anything about the contents of your 19 testimony? 20 A No. 21 Q Please look at Linda Castro. 22 A Okay. 23 Q Do you know where Ms. Castro worked? 24 A (Witness examines document.) 25 Motor Guide Marine.</p>	<p>1 Air Exchangers. 2 Q And you report on your summary that he 3 had a test, blood test, which showed a plasma 4 hemoglobin of 19 percent? 5 A Yes. 6 Q With normal of 10.4 percent? 7 A That's correct. 8 Q And so when you say 19 percent, you're 9 intending that that reflect -- that that record 10 reflects, as far as you know, the same unit of 11 measurement as the 10.4 percent shown as 12 normal; is that correct? 13 A Correct. 14 Q And are there any subsequent tests for 15 Mr. Patton to demonstrate plasma hemoglobin? 16 A No. 17 Q Do you know anything about Mr. Patton's 18 job? 19 A No. 20 Q Do you know whether or not he's a 21 smoker? 22 A I do not. 23 Q Do you know whether he's had any 24 previous problems with blacking out before this 25 event?</p>

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1 A I didn't see that in his medical records.
 2 Q Do you know whether Mr. Patton had a
 3 urine test?
 4 A He did not, as far as I know.
 5 Q Please look at Mr. Sumter.
 6 A Okay.
 7 Q Where did Mr. Sumter work?
 8 A (Witness examines document.)
 9 Air Exchangers.
 10 Q And he did a -- had blood work done; is
 11 that correct?
 12 A That's correct.
 13 Q Plasma hemoglobin and haptoglobin,
 14 right?
 15 A Yes, that's correct.
 16 Q And was the haptoglobin in the normal
 17 range?
 18 A Yes.
 19 Q Was the plasma hemoglobin in the normal
 20 range?
 21 A No.
 22 Q Do you know what Mr. Sumter's job duties
 23 were?
 24 A No.
 25 Q Of the 13 plaintiffs, would you agree that

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1 have had him repeat it.
 2 Q (BY MR. TUCKER) But for whatever
 3 reason, the physicians at that institution
 4 determined not to do that; is that correct?
 5 MR. WARD: Object to the form of the
 6 question.
 7 THE WITNESS: The test was not
 8 repeated. I don't know why.
 9 Q (BY MR. TUCKER) Would you agree that
 10 you would not have been concerned if Mr. Sumter's
 11 plasma hemoglobin report had been one percent or
 12 less?
 13 A You mean as reported by this laboratory,
 14 if it was one percent?
 15 Q As reported --
 16 A It wouldn't --
 17 Q As used by you, however you'd use one
 18 percent.
 19 A Well, if the lab report came back as one
 20 percent, and the lab normal was up to 10.4
 21 percent, this would not have indicated any
 22 hemolysis.
 23 Q Is there a difference between arsine
 24 exposure and arsine injury?
 25 A Yes. Exposure can occur without an

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1 Mr. Sumter had the highest plasma hemoglobin
 2 reading?
 3 A Yes.
 4 Q Does this high level concern you?
 5 A It indicates -- I have to know what you
 6 mean by concern. It indicates that he absorbed
 7 arsine, and it affected his red blood cells.
 8 Q Do you know where he was tested?
 9 A I do. I'd have to pull that out of the
 10 medical records.
 11 Q Was he tested at a hospital?
 12 A I don't recall.
 13 Q Was he retested?
 14 A Not to my knowledge.
 15 Q With a plasma level of 111 percent and
 16 normal of 10.4 percent, would you think that if
 17 the physicians were concerned about him that they
 18 would have retested him to determine whether it
 19 was going down or up or whatever?
 20 MR. WARD: Object to the form of the
 21 question.
 22 THE WITNESS: In his case, retesting
 23 probably would have been a good idea. If I were in
 24 the emergency department or in the office or
 25 clinic, wherever he was tested, I probably would

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1 injury.
 2 Q Is there a difference between arsine
 3 exposure and arsine poisoning?
 4 A Arsine poisoning means that there is an
 5 effect on the body, end organ, or a toxic effect on
 6 tissue or an organ or some body function.
 7 Q Do you know what that 111 percent means
 8 in the vernacular of the laboratory that made the
 9 test?
 10 A I don't understand your question.
 11 Q Well, 111 percent, how does that relate
 12 and compare to the figure in your book of 1.5
 13 percent grams per dekaliter?
 14 A You know, I don't want to say without
 15 looking at the laboratory method and the range of
 16 normal as reported by this particular lab and my
 17 reference of one and a half percent that I made in
 18 my chapter to see how those two correlate with
 19 each other in terms of a lab technique and units
 20 of measurement.
 21 Q So you'd like to see the lab report and
 22 see if that gives you any indication of what they
 23 meant by 111 percent?
 24 A Correct.
 25 Q Let me hand you what's been marked as

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<p style="text-align: right;">Page 345</p> <p>1 Defendants' Exhibit 11. I've taken the liberty of 2 highlighting that page to assist you since you're — 3 MR. WARD: Okay. 4 Q (BY MR. TUCKER) That's number 11 5 from a previous deposition so we may have to give 6 it a new number here, but those are the records of 7 St. Francis Hospital as they pertain to Mr. 8 Sumter. 9 A Okay. 10 Q How does that St. Francis Hospital, 11 Tulsa, Oklahoma laboratory report plasma free 12 hemoglobin? 13 A Well, they're reporting it as milligram 14 per, but they leave the denominator blank or the 15 basis. 16 Q Look carefully at that page, Doctor. 17 A Maybe you can point out to me if they 18 report out the unit of measurement. I see the 19 haptoglobin, but I don't see the plasma 20 hemoglobin. It says milligram, but then I don't 21 see milligram per what. I'm looking for subsequent 22 measurements. They do that again. Here it's 22.8 23 on July 12th. 24 Q Let me represent to you, Doctor, that — 25 did you call St. Francis to ask them what they</p>	<p style="text-align: right;">Page 347</p> <p>1 form. Assumes facts not in evidence. 2 Q (BY MR. TUCKER) I'd be glad to have 3 you make the phone call while we wait, Doctor, if 4 you don't want to take my word for it. 5 MR. WARD: This is a discovery 6 deposition. Keep going. I made my objection. 7 Q (BY MR. TUCKER) You didn't call them 8 before now, correct? You didn't call St. Francis — 9 A I have not called St. Francis. 10 Q You read the record that says 111 11 percent? 12 A Correct. 13 Q It was important enough for you to write 14 it down in your summary, correct? 15 A Correct. 16 Q You testified under oath that that's 17 confirming to you a diagnosis of arsine poisoning 18 occurring to this gentleman on July 11th, 2001, 19 correct? 20 A Correct. 21 Q But you don't know what 111 percent 22 refers to, and you haven't called to find out; is 23 that right? 24 A I know what it refers to. It refers to ten 25 times above the lab normal.</p>
<p style="text-align: right;">Page 346</p> <p>1 meant by that? 2 A No, I didn't. 3 Q And you know today now that's kind of a 4 pivotal question, isn't it, what they meant by 111 5 percent? 6 MR. WARD: Object to the form. 7 THE WITNESS: Well, it's above their 8 laboratory range of normal. And, you know, I'm 9 assuming that they're an accredited laboratory and 10 that they're reporting the normal range correctly 11 so that if it's 111 and it's flagged as outside the 12 range, that it is truly outside the range. 13 Your question is how does it relate to the 14 1.5 in my chapter. Now, to answer that I need to 15 call the hospital and find out what unit of 16 measurement they use and the technique that they 17 use compared to the 1.5 that I cite in my chapter. 18 Q (BY MR. TUCKER) Let me suggest to you, 19 Doctor, if you make that call, the hospital will tell 20 you that they're talking about milligrams per 21 dekaliter. 22 A Okay. 23 Q If they're talking about milligrams per 24 dekaliter, what does 111 percent mean? 25 MR. WARD: I'm going to object to the</p>	<p style="text-align: right;">Page 348</p> <p>1 You're asking me the unit of 2 measurement, I don't know that. 3 Q Is it important to know the unit of 4 measurement? 5 A Not right now. 6 Q Well — 7 A If you want me to correlate it with the 1.5 8 in my book chapter I'll be happy to do that. 9 Q That's what I want you to do. 10 A I would be happy to do that but at a later 11 date so I can call the lab and verify their 12 technique of measurement, how they do the test, 13 what units they use, and I'll go back and check 14 the reference that I use in my book chapter. 15 Q Since, as Counsel points out, this is a 16 discovery deposition and I'm not entitled to ask 17 you to do that, I am entitled to ask you to assume 18 that that's reported by St. Francis in milligrams 19 per dekaliter. That being so, I'd like you to 20 perform the mathematical calculation to convert 21 that to grams per dekaliter. Can you do that? 22 A I can try. So you want me to go from 23 what, 111 milligrams — 24 Q What does the report say? 25 A The report doesn't say. The report says</p>

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<p style="text-align: right;">Page 349</p> <p>1 milligrams.</p> <p>2 Q 111 milligrams per dekaliter.</p> <p>3 A The report doesn't say dekaliter. You're</p> <p>4 asking me to assume that it's in dekaliter?</p> <p>5 Q Yes, sir, that's correct.</p> <p>6 A Okay. So 111 milligrams per dekaliter?</p> <p>7 Q Yes.</p> <p>8 A And what would you like to convert that</p> <p>9 to?</p> <p>10 Q Convert that to grams per dekaliter.</p> <p>11 A So that looks to me like it's .111 if I did</p> <p>12 that conversion correctly.</p> <p>13 Q Just a matter of moving the decimal point</p> <p>14 over, correct?</p> <p>15 A Right.</p> <p>16 Q So it's .111 grams per dekaliter?</p> <p>17 A If I did the mathematics correctly, that's</p> <p>18 correct.</p> <p>19 Q And if we compare that to the number in</p> <p>20 your text, then that's .111 grams per dekaliter as</p> <p>21 contrasted to 1.5 grams per dekaliter; is that</p> <p>22 right?</p> <p>23 A If the 1.5 in my text refers to the same</p> <p>24 unit of measurement, that's correct. I need to</p> <p>25 confirm that.</p>	<p style="text-align: right;">Page 351</p> <p>1 we read from yesterday?</p> <p>2 A Yes.</p> <p>3 Q Do you recall the units of measurement</p> <p>4 he used?</p> <p>5 A They actually don't use a unit of</p> <p>6 measurement there. They didn't talk about the</p> <p>7 1.5. That's from my chapter.</p> <p>8 Q He didn't discuss 1.5 percent in your</p> <p>9 colleague's book?</p> <p>10 A No. That's just from my book -- that's</p> <p>11 just from my chapter. And as far as I can recall, I</p> <p>12 referenced a -- I believe I reference a 1974 paper</p> <p>13 by Fowler, but I'd have to go back and</p> <p>14 double-check.</p> <p>15 Q Of course you have the right to do that,</p> <p>16 but I still want you to make the conversion of 1.5</p> <p>17 grams per dekaliter to milligrams per dekaliter so</p> <p>18 in case I'm right, we won't have to come back and</p> <p>19 repeat this exercise at \$500 an hour.</p> <p>20 MR. WARD: You don't have to anyway.</p> <p>21 THE WITNESS: You know, I just don't</p> <p>22 want to say as I sit here today, because I don't</p> <p>23 want to be incorrect on my units of measurement.</p> <p>24 Q (BY MR. TUCKER) Well, how did you</p> <p>25 convert milligrams to grams?</p>
<p style="text-align: right;">Page 350</p> <p>1 Q This .111 is grams per dekaliter.</p> <p>2 Converting 111 milligrams per dekaliter to grams</p> <p>3 per dekaliter gets you .111 grams per dekaliter,</p> <p>4 right?</p> <p>5 A Correct.</p> <p>6 Q In your book you use the standard of</p> <p>7 measurement of grams per dekaliter.</p> <p>8 A Well, in my book I use 1.5 percent.</p> <p>9 Q And how many milligrams per dekaliter is</p> <p>10 1.5 percent?</p> <p>11 A I want to check the reference.</p> <p>12 Q Well, just -- isn't it just a matter of</p> <p>13 moving the decimal point? How many milligrams</p> <p>14 per dekaliter is one and a half grams per</p> <p>15 dekaliter?</p> <p>16 A I want to check the reference that I refer</p> <p>17 to and see how the reference of 1.5 percent</p> <p>18 compares with this lab value.</p> <p>19 Q Didn't you testify yesterday that it was</p> <p>20 grams per dekaliter?</p> <p>21 A I don't recall, but if I did, I'll take your</p> <p>22 word for it. But as far as this particular issue is</p> <p>23 concerned as to how the 1.5 in my text compares</p> <p>24 to this 111, I want to check the reference.</p> <p>25 Q Do you recall your colleague's book that</p>	<p style="text-align: right;">Page 352</p> <p>1 A Well, this conversion I know how to do. I</p> <p>2 moved the decimal point over. But before I give</p> <p>3 you the answer to what the percent is that I quote</p> <p>4 in my chapter in terms of units of measurement, I</p> <p>5 want to check before I give you the answer to that,</p> <p>6 because I am not certain, and it's an important</p> <p>7 issue. So I'm not prepared to answer today.</p> <p>8 Q That's fine. But I'm willing to take what</p> <p>9 you told me yesterday for the basis of the question</p> <p>10 I'm asking you now, which is simply to ask you to</p> <p>11 perform a simple mathematic calculation of moving</p> <p>12 the decimal point three places in the other</p> <p>13 direction.</p> <p>14 A Well, no, you didn't ask me that. You</p> <p>15 said convert 1.5 percent into some amount -- or</p> <p>16 some amount.</p> <p>17 Q Convert 1.5 grams per dekaliter into</p> <p>18 milligrams per dekaliter. Can you do that for me,</p> <p>19 please.</p> <p>20 A 1.5 grams per dekaliter equals --</p> <p>21 Q How many milligrams per dekaliter?</p> <p>22 A Oh, okay. That's just moving the decimal</p> <p>23 point over three spaces. So let's move it over one,</p> <p>24 two, so that's 1500 milligrams per dekaliter.</p> <p>25 MR. WARD: Excuse me just a second, but</p>

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<p style="text-align: right;">Page 353</p> <p>1 just for point of clarification, dekagram is a 2 hundred, right? 3 MR. TUCKER: A what? 4 MR. WARD: Dekaliter, "deka" means 5 hundred, doesn't it? 6 THE WITNESS: He asked me to convert 7 1.5 grams per dekaliter. You're right. Grams to 8 milligrams is a factor of a hundred. 9 Q (BY MR. TUCKER) A hundred? 10 A Let me see. Grams -- see, this is why I 11 want to go double-check. 12 Q What is a milligram? 13 A It's a thousand grams. 14 Q So how could it not be a thousand? How 15 could it not be three decimal places? I'm going 16 with deka. 17 MR. WARD: Dekka is a hundred. 18 MR. TUCKER: Nobody is talking about 19 deka. 20 THE WITNESS: So 1.5 grams per 21 dekaliter corresponds to 1500 milligrams per 22 dekaliter. 23 Q (BY MR. TUCKER) Let me understand 24 this. You're having to take my word for the fact 25 that St. Francis Hospital is reporting in</p>	<p style="text-align: right;">Page 355</p> <p>1 range of laboratory normal. And I'm assuming 2 that this lab reporting an upper limit of normal of 3 10.4 is reporting an accurate normal range. I'd be 4 happy to double-check that for you. 5 Q So what you will be looking to find out 6 would be if 10.4 is 10.4 milligrams per dekaliter 7 as a normal range; is that right? 8 A I want to -- I will be happy to verify 9 whether the upper limit of the lab normal is 10 correct and consistent with the literature. I think 11 that's your central question there. 12 Q Just to answer Mr. Ward's question, how 13 many milligrams are present in a dekaliter? 14 MR. WARD: That's not my question. 15 Grams and liters, that's two different 16 measurements. 17 THE WITNESS: I'll check that and get 18 back to you. 19 Q (BY MR. TUCKER) Would you agree, 20 Doctor, that there are a hundred thousand 21 milligrams in a dekaliter? 22 A I'll check. What we're talking about here 23 is whether the range of normal as reported by this 24 particular lab is a correct or toxicologically 25 significant upper limit.</p>
<p style="text-align: right;">Page 354</p> <p>1 milligrams per dekaliter, because even though you 2 had that material and you've used it and reported 3 on it and testified about it today, you never really 4 figured out what they were referring to when they 5 talked about 111 percent; is that right? 6 MR. WARD: That's an incorrect 7 statement of his testimony. He said it's roughly 8 ten times the normal range reported by the 9 laboratory. 10 Q (BY MR. TUCKER) Do you know -- 11 MR. WARD: So it's an absolutely 12 incorrect characterization of his testimony. 13 Q (BY MR. TUCKER) Do you know in grams 14 per dekaliter what the normal range is for plasma 15 free hemoglobin as a toxicologist? 16 A In grams per dekaliter? 17 Q Uh-huh. Yes. 18 A I'll check that for you. As I sit here 19 today, I don't want to answer one way or the 20 other. 21 Q Would it have been a good thing before 22 you gave your opinions to identify what the normal 23 ranges were for plasma free hemoglobin since 24 that's the number-one indicator of hemolysis? 25 A No. What I was looking at here was the</p>	<p style="text-align: right;">Page 356</p> <p>1 Q That's a -- 2 A It's not the specific numbers conversion 3 of milligrams to dekaliter or to liter. It is when 4 they report upper limit of normal at 10.4, that 5 makes sense from a toxicologic point of view, or 6 whether this lab is doing something wrong in the 7 way they report their lab normals. 8 Q Let's use the phrase toxicologic 9 significance, okay? 10 MR. WARD: Can we use the word 11 toxicological significance? 12 Q (BY MR. TUCKER) Toxicological 13 significance? 14 MR. WARD: Objection. That's really two 15 words. So I guess it would be a phrase, wouldn't 16 it? 17 Q (BY MR. TUCKER) If your testimony 18 yesterday was correct that in your book, which 19 doesn't further identify it, one and a half percent 20 meant grams per kilogram -- or grams per 21 dekaliter, we assume that you were correct 22 yesterday when you told us what your book meant, 23 then Mr. Sumter had a reading of .111 percent 24 when you convert his numbers to grams per 25 dekaliter; is that right?</p>

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1 A I don't have an opinion without checking
2 my reference and comparing that to the lab --
3 Q Well, I'm going to --
4 A -- who did the test on Mr. Sumter.
5 Q I'm going to ask you to assume that when
6 the lab reported down a value of 111 percent from
7 St. Francis Hospital, that it was reporting a
8 laboratory value of 111 milligrams per dekaliter,
9 okay? Assume that to be true. You're an expert.
10 I get to make assumptions and ask you questions.
11 A (Witness nods head.)
12 Q Fact number one, assume St. Francis
13 laboratory's report on Mr. Sumter's blood is that
14 his plasma free hemoglobin was 111 milligrams
15 per dekaliter. Assume as fact number two that Dr.
16 William Harrison, expert toxicologist, testified
17 yesterday --
18 A My name is Robert.
19 Q I'm sorry.
20 A I don't know who William is.
21 Q He was a hand surgeon.
22 A Was he as famous as I was?
23 Q He's a retired hand surgeon.
24 That Dr. Robert Harrison testified
25 yesterday in his book that the diagnosis of arsine

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1 MR. WARD: Object to the form of the
2 question. He said he needed to check his sources
3 for that to be his measurement.
4 Q (BY MR. TUCKER) Assuming those facts
5 to be true.
6 A If we assume those facts to be true,
7 that's correct, assuming that the conversion
8 factors as you laid out are correct.
9 Q The only factor that you don't really know
10 about is whether you were testifying accurately
11 yesterday when you said your book was referring
12 to 1.5 percent as grams per dekaliter? You don't
13 know that anymore?
14 A That is correct. See, I need to check the
15 reference because I want to make sure that the
16 numbers here make sense.
17 Q And number two, you only have my
18 representation that St. Francis Hospital is
19 reporting its plasma free hemoglobin levels in
20 milligrams per dekaliter?
21 A That's correct.
22 Q So you, of course, would want to check
23 that out and make sure I didn't screw that up?
24 A Correct.
25 Q Don't blame you.

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1 poisoning is confirmed by a plasma free
2 hemoglobin reading of 1.5 grams per dekaliter or
3 higher. Assume that to be a fact.
4 If you assume those facts to be true, and
5 add one more fact, that that converts to -- that
6 1.5 grams per dekaliter converts to 1,500
7 milligrams per dekaliter, okay? Those are the
8 numerical facts I want you to assume.
9 Are we clear on what those are?
10 A Got you.
11 Q So if we compare Mr. Sumter to Dr.
12 Harrison, when we compare milligrams per
13 dekaliter we're comparing Mr. Sumter has 111,
14 and Dr. Harrison says that confirming diagnosis is
15 1,500, correct?
16 A I'm understanding the hypothetical so
17 far.
18 Q When you compare those things, that is
19 the comparison, isn't it?
20 A With that assumption that you make,
21 that's correct.
22 Q And flipping it the other way, if we use
23 Dr. Harrison's unit of measurement of 1.5 grams
24 per dekaliter, then Mr. Sumter's blood report was
25 0.111 grams per dekaliter; is that correct?

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1 Are you aware of any of the 192 plaintiffs
2 that had a plasma free hemoglobin reading higher
3 than Mr. Sumter's?
4 A No.
5 Q If the facts I'll ask you to assume are
6 correct -- and I ask you to assume that they are
7 correct -- and the highest exposure anybody was
8 found to have as far as any reaction in their blood
9 was concerned that could reasonably be attributed
10 to anything, in other words, the highest plasma
11 free hemoglobin number was .1 -- 0.111 percent
12 grams per dekaliter and the only reference book
13 that we've seen and the only reference material
14 that's in this case so far is that to confirm the
15 diagnosis of arsine poisoning, it requires 1.5
16 grams per dekaliter, can you sit there as an expert
17 witness and say under oath that to a reasonable
18 degree of medical certainty, Mr. Sumter suffered
19 arsine poisoning because of July 11th, 2001?
20 A Yes. And it gets back to what --
21 assuming that the facts you said are correct, what
22 we mean by the significance of that 1.5, which
23 when I was writing about it means that you call
24 for packed red blood cells and get ready to
25 transfuse.

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<p style="text-align: right;">Page 361</p> <p>1 Q Assume what I said was correct, that my 2 assumptions are true, is your answer still yes? 3 A Yes. 4 Q Are you aware of any medical literature 5 that shows you can diagnose acute arsine 6 poisoning with a laboratory reference value of 111 7 milligrams per dekaliter of plasma free 8 hemoglobin? 9 A There's peer-reviewed literature that says 10 that elevated plasma free hemoglobin indicates 11 arsine exposure and absorption. 12 Q My question is do you know of any 13 peer-reviewed literature that shows that at that 14 level, 111 milligrams per dekaliter, that you'd 15 have any consequence, particularly long-term 16 consequence of arsine exposure? 17 A That's a different question. I want to 18 point out that you then moved on to the second 19 issue. 20 The first is, is there an injury in the form 21 of intravascular hemolysis that causes an increase 22 in the normal range of plasma free hemoglobin. 23 And my belief is that there is. 24 Q Because we have 111 milligrams -- 25 assuming I'm correct, milligrams -- it's still an</p>	<p style="text-align: right;">Page 363</p> <p>1 long-term problems as a consequence? 2 A As I sit here today, I don't have that 3 citation for you, but I'd be happy to look and keep 4 an open mind and try to find that literature. 5 Q Do you know of any? 6 A That looks at the spectrum of health 7 effects from given levels of or tested levels of 8 plasma free hemoglobin at the time of acute 9 exposure? There is literature that looks at 10 long-term effects of acute exposure to arsine. I 11 need to look at that literature to see what the 12 laboratory values were, whether they include 13 plasma free hemoglobin, whether they're in the 14 111 range. 15 Q Have you ever done that? 16 A Have I done what? 17 Q Have you made that search previous to 18 today? 19 A I did a search to look at whether there 20 are chronic effects after acute exposure to arsine 21 gas. And the effects that are reported are central 22 nervous system and peripheral nervous system, 23 peripheral neuropathy. 24 Q You've never done the search to determine 25 what threshold level of plasma free hemoglobin</p>
<p style="text-align: right;">Page 362</p> <p>1 increase in hemolysis? 2 A Correct. If I go and test a hundred 3 people who walk into this, whatever this hospital 4 is, St. Francis I think you said, I'm going to find 5 that almost all of them are going to be within the 6 range less than 10.4 percent. 7 When Mr. Sumter walked in, he's 111 8 percent. He's clearly outside that range. He's 9 different from the hundred people that have 10 walked in. And assuming that there's not some 11 mechanical problem or some artifactual cause of 12 his hemolysis, it represents exposure in my 13 opinion. 14 Q The second -- 15 A The second part of the question, does 16 that cause long-term injury? I mean, he had an 17 injury and, in fact, intravascular hemolysis. Does 18 that cause long-term health problems? And I 19 believe that's the second question that you asked. 20 Q And my question -- try to focus on that 21 second question. I want to know if you have 22 access to any peer-reviewed literature that says 23 that with that kind of level of plasma free 24 hemoglobin, 111 milligrams per dekaliter, there's 25 any evidence that anybody is going to have any</p>	<p style="text-align: right;">Page 364</p> <p>1 would be consistent with any long-term effects; is 2 that correct? 3 A Well, I have the articles, but I would need 4 to look back at them and see whether we can 5 answer your question. 6 Q Are these the articles that are in your 7 notebook? 8 A In terms of citation, in my citations 9 attached to my report, and also they're in the 10 notebook. 11 Q So the articles you're going to look at for 12 that information would be either contained in your 13 notebook or in the citations attached to your 14 report? 15 A Yeah. And I'd be happy to see if there 16 was others out there in the peer-reviewed 17 literature. 18 Q I just want to make sure that you don't 19 have -- when you say you're going to go back and 20 look, you're talking about going back and looking 21 at the information on which you have already 22 relied; is that correct? 23 A I will go back and look at that 24 information and any other information that's 25 available in the peer-reviewed and</p>

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<p>1 nonpeer-reviewed literature, including</p> <p>2 authoritative organizations that might have some</p> <p>3 information if you're interested in that.</p> <p>4 MR. TUCKER: Let's go off the record.</p> <p>5 (Recess taken.)</p> <p>6 Q (BY MR. TUCKER) What I'm going to do,</p> <p>7 I'm going to identify exhibits that we're offering to</p> <p>8 the deposition from your file. And you can feel</p> <p>9 free to check it, or we can trust Candy.</p> <p>10 Number 2, file folder with notes about</p> <p>11 Daubert. Number 3, letter from Mr. Ward dated</p> <p>12 12/22/04. Number 4, map re high plasma</p> <p>13 hemoglobin. Number 5, all client locations map.</p> <p>14 Number 6, map re 13 clients. Number 7, map re</p> <p>15 high hemoglobin. 8, map re clients with</p> <p>16 hematuria. Number 9, letter to Mr. Stoops dated</p> <p>17 4/30/05. Number 10, billing invoice that refers</p> <p>18 to Dr. Harrison, November 29, '04. Number 11,</p> <p>19 billing invoice, January 7, '05. Number 12,</p> <p>20 billing invoice, May 1, '05. Number 13, billing</p> <p>21 invoice dated 6/20/2005.</p> <p>22 Just by way of summing all that up, that</p> <p>23 all reflects spending a total of five and a half</p> <p>24 hours on this matter prior to writing your report.</p> <p>25 Number 14, Charles Biddle medical</p>	<p>1 Number 30, URS soil samples. Number 31, Rule</p> <p>2 26. Number 32, article regards chemical</p> <p>3 terrorism. Number 33, arsine acute toxicity</p> <p>4 summary. Number 34, IDLH re arsine. Number</p> <p>5 35, N-I-O-S-H, NIOSH, paper. Number 36, ATSDR</p> <p>6 paper. Number 37, NIOSH publication. Number</p> <p>7 38, MSDS from Air Products. Number 39, MSDS</p> <p>8 from Praxair, P-r-a-x-a-i-r. Number 40, MSDS</p> <p>9 from Matheson Gas, M-a-t-h-e-s-o-n. Number 41,</p> <p>10 BOC Gasses. Number 42, ChemWatch. Number</p> <p>11 43, TRI Explorer. Number 44, weather data.</p> <p>12 Number 45, NIOSH pocket guide. Number 46,</p> <p>13 notes made at deposition regarding calculations of</p> <p>14 dekaliters.</p> <p>15 A What did you refer to as Exhibit 27 that</p> <p>16 said medical chart?</p> <p>17 MS. SMITH: Harrison medical chart. I</p> <p>18 think it's that one.</p> <p>19 THE WITNESS: Oh, it's the table, okay.</p> <p>20 MR. WARD: Would you tell us what the</p> <p>21 purpose was of you reading Ms. Smith's notes into</p> <p>22 the record?</p> <p>23 MR. TUCKER: She asked me to.</p> <p>24 MR. WARD: So you're not suggesting that</p> <p>25 those notes are probative of anything or</p>
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<p>1 records. Number 15, Theresa Haggard medical</p> <p>2 records. Number 16, highlighted copy of Gad's</p> <p>3 report. Number 17, notebook containing</p> <p>4 Solkatronics documents 00062 through 00383 re</p> <p>5 investigation, Plaintiffs' Exhibits 57 to 67, the</p> <p>6 MSDS Air Products, the Hastings report on Mr.</p> <p>7 Sumter, a map of the port. Number 18, literature</p> <p>8 notebook sent to Mr. Harrison by plaintiffs'</p> <p>9 attorneys that we previously identified as research</p> <p>10 materials. Number 19, notes of Dr. Harrison</p> <p>11 regarding assignment of the case. Number 20,</p> <p>12 letters from plaintiffs' attorney dated -- or letter</p> <p>13 from plaintiffs' attorney dated October 6, 2004.</p> <p>14 Number 21, two-page letter from plaintiffs'</p> <p>15 attorney enclosing medicals, dated October 12,</p> <p>16 2004. Two-page letter from plaintiffs' attorney</p> <p>17 enclosing medical and other material dated</p> <p>18 December 16, 2004. One-page letter with medical</p> <p>19 records dated December 16, 2004. Two-page letter</p> <p>20 from plaintiffs' attorney with additional records</p> <p>21 dated May 9, 2005. Number 25, Med-Search.</p> <p>22 Number 26, hazard assessment, Catoosa,</p> <p>23 Oklahoma. Number 27, Dr. Harrison's medical</p> <p>24 chart. Number 28, minutes of the July 17, 2001</p> <p>25 port meeting. Number 29, Tulsa news coverage.</p>	<p>1 representative of anything. You're just reading</p> <p>2 notes that Ms. Smith gave you.</p> <p>3 MR. TUCKER: To identify for the record</p> <p>4 how we've numbered the exhibits which would be</p> <p>5 for the good of anybody if we want to go find them.</p> <p>6 MR. WARD: Would you agree with me</p> <p>7 that Dr. Harrison wasn't following along with you</p> <p>8 as you read that, comparing that to exhibits?</p> <p>9 You'd agree with that, wouldn't you.</p> <p>10 MR. TUCKER: Dr. Harrison appeared</p> <p>11 somewhat zoned out.</p> <p>12 MR. WARD: And no one was checking</p> <p>13 while you were reading, right? You'd agree with</p> <p>14 that?</p> <p>15 MR. TUCKER: That's correct.</p> <p>16 MR. KENYON: Let's go off the record.</p> <p>17 (Discussion off the record.)</p> <p>18 MR. TUCKER: We need to probably</p> <p>19 record this for custody chains and so forth.</p> <p>20 Q (BY MR. TUCKER) With your consent</p> <p>21 we'd like to ask the court reporter to obtain copies</p> <p>22 of all these records and have her be responsible</p> <p>23 for the exhibits.</p> <p>24 A And the court reporter will send them</p> <p>25 back to me?</p>

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<p style="text-align: right;">Page 369</p> <p>1 Q She'll get them back to you.</p> <p>2 A That will be fine.</p> <p>3 MS. SMITH: Off the record for a second.</p> <p>4 (Discussion off the record.)</p> <p>5 MR. TUCKER: I don't have any further</p> <p>6 questions at this time. I would like to remind you</p> <p>7 that you're going to look for some stuff and give it</p> <p>8 to your counsel to give to me, correct?</p> <p>9 THE WITNESS: Correct.</p> <p>10 MR. TUCKER: Exhibits 47, 48 and 49</p> <p>11 will be the CD-ROM medical records which Dr.</p> <p>12 Harrison is going to give to the court reporter</p> <p>13 today.</p> <p>14 Q (BY MR. TUCKER) Those CD-ROMs came</p> <p>15 to you, as I understand, Doctor, from plaintiffs'</p> <p>16 attorneys; is that correct?</p> <p>17 A Yes.</p> <p>18 MR. WARD: Okay.</p> <p>19 EXAMINATION</p> <p>20 BY MR. WARD:</p> <p>21 Q Dr. Harrison, during the course of Mr.</p> <p>22 Tucker's questions, you have from time to time</p> <p>23 given the opinion that individuals had exposure</p> <p>24 and/or injury from arsine, have you not?</p> <p>25 A Yes.</p>	<p style="text-align: right;">Page 371</p> <p>1 A Yes, they do.</p> <p>2 Q And has that method gained scientific</p> <p>3 acceptance in the medical community?</p> <p>4 A Yes.</p> <p>5 Q Is it a standard method of making a</p> <p>6 diagnosis for all physicians in the United States?</p> <p>7 A Yes. It's accepted in the medical and</p> <p>8 scientific community across the country.</p> <p>9 Q Now, in making a diagnosis of arsine</p> <p>10 exposure, is it important for you to factor in</p> <p>11 the -- I forget the term, but the likelihood of</p> <p>12 exposure opportunity?</p> <p>13 A Yes.</p> <p>14 Q And why is that important?</p> <p>15 A It's important to know the process or</p> <p>16 the circumstances of exposure to know whether</p> <p>17 it's -- to know the likelihood that the chemical is</p> <p>18 released into the air that can then potentially be</p> <p>19 breathed by the person.</p> <p>20 Q And is the opportunity for exposure one</p> <p>21 of the things that you have considered in making</p> <p>22 your differential diagnosis?</p> <p>23 A Yes.</p> <p>24 Q Now, in this particular case do you know</p> <p>25 what the olfactory threshold is for arsine?</p>
<p style="text-align: right;">Page 370</p> <p>1 Q And what you've employed as a medical</p> <p>2 doctor is the technique known as differential</p> <p>3 diagnosis, have you not?</p> <p>4 A Yes.</p> <p>5 Q Is the --</p> <p>6 MR. TUCKER: Object to the form of the</p> <p>7 question.</p> <p>8 MR. WARD: Huh? What?</p> <p>9 MR. TUCKER: You're supposed to ask</p> <p>10 him what technique did he use. You're not</p> <p>11 supposed to suggest the answer to him.</p> <p>12 MR. WARD: Why not?</p> <p>13 MR. TUCKER: That's a leading question.</p> <p>14 MR. WARD: Why don't you object?</p> <p>15 MR. TUCKER: I did.</p> <p>16 MR. WARD: Okay.</p> <p>17 Q (BY MR. WARD) Your answer was what?</p> <p>18 A Yes. I have employed the differential</p> <p>19 diagnosis.</p> <p>20 Q And do physicians generally employ</p> <p>21 differential diagnosis as a way of --</p> <p>22 MR. TUCKER: Object to the form of the</p> <p>23 question.</p> <p>24 Q (BY MR. WARD) -- making a diagnosis on</p> <p>25 a person?</p>	<p style="text-align: right;">Page 372</p> <p>1 A Yes.</p> <p>2 Q And what is it?</p> <p>3 A 0.5 parts per million.</p> <p>4 Q And is the olfactory threshold an effective</p> <p>5 means for knowing whether a person has been</p> <p>6 exposed to a high enough concentration to produce</p> <p>7 an injury?</p> <p>8 A No.</p> <p>9 Q Why is that?</p> <p>10 A The threshold for an injury that's set in</p> <p>11 terms of occupational standards is .05 parts per</p> <p>12 million, which is a tenth of the olfactory</p> <p>13 threshold.</p> <p>14 Q So if a person smells arsine, is it fair to</p> <p>15 say that they are way above the threshold for</p> <p>16 cause of injury?</p> <p>17 A That's correct.</p> <p>18 Q All right.</p> <p>19 Now, in this particular case did you note</p> <p>20 whether any of the plaintiffs had indicated a smell</p> <p>21 which might be associated with arsine?</p> <p>22 A Yes, I did.</p> <p>23 Q And what did the plaintiffs report?</p> <p>24 A Some of the plaintiffs reported a</p> <p>25 garlic-like odor.</p>

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<p style="text-align: right;">Page 373</p> <p>1 Q And what would that indicate to you, if 2 they in fact detected a smell, garlicky smell? 3 A That it was above the odor threshold of .5 4 parts per million. 5 Q Now, also when reading Exhibit No. 28, 6 which were the meetings of the Tulsa Port of 7 Catoosa, the post-incident evaluation meeting of 8 July 17 -- I think you indicated you did read 9 those, did you not? 10 A Yes. 11 Q Now, did you notice that there was a 12 person by the name of Mr. Joseph who was present 13 and spoke at that meeting? 14 A Yes. 15 Q And he's identified on Exhibit No. 28 as 16 being the plant manager for Solkatronics. 17 Do you understand that? 18 A Yes, I see that. 19 Q Now, I want to draw your attention to 20 some statements that Mr. Joseph made and ask 21 how those bear on your opinions. 22 Mr. Joseph -- on what's Bates stamped 23 PORT-83, page 2 -- says that "in the beginning, 24 looked like a major incident." 25 So if the plant manager is making</p>	<p style="text-align: right;">Page 375</p> <p>1 and met with them, when he says, "The wind was 2 in a northwest direction, and we know it drifted in 3 that direction," combined with his earlier 4 statement that it drifted off site, would that bear 5 upon your opinion as to whether there was an 6 opportunity for exposure? 7 A Yes. 8 Q Because these Air Exchanger employees 9 were northwest of Solkatronics, were they not? 10 A That's correct. 11 Q Now, Mr. Tucker asked you some 12 questions about would you want to see the health 13 records of the actual Solkatronics employees, and 14 whether that would assist you in your opinions. I 15 want to ask you a few questions related to that. 16 One of the persons present at that 17 meeting was Jarrad Garrison, the operations 18 manager for Solkatronics. And he says that -- I'm 19 going to read here. He says, "At approximately 20 1:00 p.m., Wednesday, July 11th, we heard a pop 21 from our dock and rush of gas. I was with one of 22 our lead operators who walked out a different door 23 and saw that we had a gasleak from what we were 24 pretty sure was an arsine cylinder by its location 25 on the dock. We started evacuating the plant."</p>
<p style="text-align: right;">Page 374</p> <p>1 reference to this as what looked like it could be a 2 major incident, would you find that to be relevant 3 to the opportunity aspect for exposure? 4 A Yes. I would consider that to be -- that 5 kind of statement means that there's a significant 6 exposure potential. 7 Q Mr. Joseph continues on; and this is six 8 days after the incident when all his experts from 9 Allentown were flown in. And when he reports to 10 the group, "As you know, we had an arsine release 11 which went off-site," would that bear upon your 12 opinion as to the opportunity for exposure in this 13 case? 14 A Yes. 15 Q When a plant manager makes the 16 statement that "Air Products is poised to address 17 those issues to be sure we compensate people for 18 what happened during that time," would that 19 suggest to you that as the plant manager there 20 was an opportunity for exposure? 21 A Yes. It suggests that there was the 22 opportunity for exposure and consequential 23 injury. 24 Q And six days after the incident, after he's 25 gathered all his so-called experts from Allentown</p>	<p style="text-align: right;">Page 376</p> <p>1 Now, if the employees were in fact 2 evacuated before -- of Solkatronics before there 3 was an opportunity for exposure, would it do any 4 good to see their medical records? 5 A Probably not, I mean, if they weren't 6 exposed to arsine, because they were able to get 7 out. 8 Q And he continues, "As we evacuated the 9 plant, I called our safety/environmental manager 10 in Pennsylvania, so he could go ahead and put 11 together the crisis and communication team we 12 have in Allentown. From that, they contacted the 13 appropriate local authorities for the release." 14 Would it have -- well, as an 15 epidemiologist and a person who has had a number 16 of cases involving chemical exposures, what 17 comment would you make as to where their first 18 call should have been, to Allentown or to local 19 authorities? 20 A Well, in terms of the emergency response 21 planning that I've been involved with as an 22 epidemiologist and an occupational environmental 23 medicine physician, the first call would be to the 24 local emergency management authorities, the 25 hazardous materials crews, the fire department,</p>

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<p style="text-align: right;">Page 377</p> <p>1 who can immediately activate an emergency 2 response network. 3 Q Now, if Solkatronics' reaction was to 4 immediately evacuate their employees, would you 5 think it would be advisable to notify the neighbors 6 to evacuate also? 7 A Yes. There should be an immediate 8 activation plan in place to notify, evacuate, or 9 shelter-in-place, as we call it, stay indoors, keep 10 the doors and windows shut after an accidental 11 chemical release. 12 Q There's a statement on page 8 of this 13 document from a person named Michael Lowther of 14 Solvay Fluorides, Inc. He says, "By the way, we 15 were not notified. What is your location in 16 relation to Solkatronics? We are behind Advanced 17 Research." 18 If neighbors were not notified, would that 19 bear upon your opinion concerning the 20 opportunity for exposure in this case? 21 A Yes. 22 Q And on page 16 of that document, the 23 chief of the Claremore Fire Department, David 24 Horton, made a statement that there were 74 25 people that are complaining of symptoms.</p>	<p style="text-align: right;">Page 379</p> <p>1 to return this page, or do you think you're almost 2 done? 3 MR. WARD: No. 4 (Recess taken.) 5 Q (BY MR. WARD) Doctor, we were talking 6 about the opportunity for exposure and Mr. 7 Tucker's question to you about whether or not you 8 had examined the hospital records of the 9 Solkatronics or Air Products employees. 10 Part of the materials that you reviewed 11 includes Exhibit No. 17 to this deposition. And at 12 tab M, I want to go through with you the 13 statements made by Air Products employees 14 concerning their opportunity for exposure. 15 Do you see Bob Malek's interview? 16 A Yes. 17 Q And he says he didn't smell anything, 18 right? 19 A Yes. 20 Q So that would tend to discount the 21 possibility that he was exposed, would it not? 22 A Yes. 23 Q And do you see here where he says, but 24 he evacuated? 25 A Yes.</p>
<p style="text-align: right;">Page 378</p> <p>1 Would that be important in your 2 opinion concerning opportunity for exposure? 3 A Yes. 4 Q And I want to address that statement of 5 Mr. Tilly's, that there were 400 lawyers outside 6 the hospital when this occurred. 7 Do you have any idea how Mr. Tilly made 8 that account? 9 A No. 10 Q Do you know whether he was even present 11 at the hospital? 12 A I do not. 13 Q Well, let me represent to you that I got a 14 call from one of the family members that asked me 15 to go see their husband at the hospital. And I was 16 there, and I didn't see a single lawyer there. 17 So would that have any bearing on -- if 18 that fact were true, would that have any bearing 19 on Mr. Tilly's statement, do you think? 20 A Yes, it would. I think that accounts by 21 others who were actually there would be important 22 to consider. 23 Q Okay. 24 THE WITNESS: I don't want to break up 25 your train of questions, but would you permit me</p>	<p style="text-align: right;">Page 380</p> <p>1 Q And that would discount the possibility of 2 being exposed too, wouldn't it? 3 A Yes. 4 Q Would the same be true of Steve Carlson, 5 who was interviewed, the Air Products employee? 6 A Yes. 7 Q He didn't smell anything, and he too 8 evacuated. 9 Now, Dusty Johnson is a contractor, not 10 an employee, but do you see where he says he 11 evacuated and didn't smell anything? 12 A Yes. 13 Q And likewise, Richard Morgan, a 14 contractor, says that he evacuated and didn't 15 smell anything? 16 A Yes. 17 Q Kelly Gary, a contractor, he says he was 18 evacuated and didn't smell anything, does he not? 19 A Yes. 20 Q Ron Brown, a contractor, says he was 21 evacuated and didn't smell anything, does he not? 22 A That's correct. 23 Q Tom Duncan, a contractor, says he was 24 evacuated and didn't smell anything, correct? 25 A That's correct.</p>

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<p>1 Q Brian Herrick, a contractor, says he was 2 evacuated and didn't smell anything, correct? 3 A That's correct. 4 Q David D-i-P-b-o-y-e, a contractor, says 5 hewas evacuated and didn't smell anything, 6 correct? 7 A Yes. 8 Q Walt Spiegel, an APCI employee, says he 9 evacuated and didn't smell anything, correct? 10 A Correct. 11 Q Same would be true of Ralph Housman, a 12 contractor, correct? 13 A Yes. 14 Q Same would be true of Doug Klintworth, a 15 contractor, would it not? 16 A Yes. 17 Q Would the same be true of Chuck Jones, a 18 contractor, that is that he evacuated and didn't 19 smell anything? 20 A Yes. 21 Q Same be true of Kelly Brown, a 22 contractor? 23 A Yes. 24 Q Would the same be true of Doug 25 Cammillaire -- that's C-a-m-m-i-l-a-i-r-e, he</p>	<p>1 have smelled something, correct? 2 A Yes, that's correct. 3 Q Issac Saldivar, S-a-l-d-i-v-a-r, evacuated 4 and didn't smell anything, correct? 5 A Correct. 6 Q Chris Stewart, a contractor, evacuated 7 and didn't smell anything, correct? 8 A That's correct. 9 Q Bruce Stewart, a contractor, evacuated 10 and didn't smell anything, correct? 11 A Correct. 12 Q Terry Morris, a contractor, evacuated and 13 didn't smell anything, correct? 14 A Correct. 15 Q David Shoras, S-h-o-r-a-s, evacuated and 16 didn't smell anything, correct? 17 A Correct. 18 Q Kevin Yoder, a contractor, evacuated and 19 didn't smell anything, correct? 20 A Correct. 21 Q Joe Valdez, a contractor, evacuated and 22 didn't smell anything, correct? 23 A Correct. 24 Q Randy Stines, a contractor, evacuated 25 and didn't smell anything, correct?</p>
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<p>1 evacuated and didn't smell anything either, did 2 he? 3 A That's correct. 4 Q Mike Brown, a contractor, evacuated. He 5 didn't smell anything, did he? 6 A No. 7 Q Enrique Guerra, G-u-e-r-r-a, evacuated 8 anddidn't smell anything, did he? 9 A That's correct. 10 Q Pablo Tolentino evacuated and didn't 11 smell anything? 12 A That's correct. 13 Q Claudio Torres Desendy, D-e-s-e-n-d-y, 14 he evacuated and didn't smell anything, did he? 15 A That's correct. 16 Q Antonio Guerro, contractor, he evacuated 17 and didn't smell anything, correct? 18 A That's correct. 19 Q Umberto A-l-c-a-n-t-a-r-a evacuated and 20 didn't smell anything, correct? 21 A That's correct. 22 Q Castor Vega evacuated and didn't smell 23 anything, correct? 24 A Correct. 25 Q James Mackey evacuated and claimed to</p>	<p>1 A Correct. 2 Q Robert Mike Mahoney evacuated and 3 didn't smell anything, correct? 4 A Correct. 5 Q Diana Davis, a contractor, evacuated and 6 didn't smell anything, correct? 7 A Correct. 8 Q Steve Frazier, a contractor, evacuated 9 and didn't smell anything, correct? 10 A Correct. 11 Q Jim Wheeler, a contractor, evacuated and 12 didn't smell anything, correct? 13 A Correct. 14 Q Chad Potts, a contractor, evacuated and 15 didn't smell anything, correct? 16 A Correct. 17 Q Sean Housman evacuated and didn't smell 18 anything, correct? 19 A That's correct. 20 Q Ron Honeywell, a contractor, evacuated 21 and didn't smell anything, correct? 22 A That's correct. 23 Q Oscar Maldonado, a contractor, evacuated 24 and didn't smell anything, correct? 25 A That's correct.</p>

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<p style="text-align: right;">Page 385</p> <p>1 Q Jennifer Nicol, a contractor, evacuated 2 and didn't smell anything, correct? 3 A That's correct. 4 Q Eric Vigland, an employee, evacuated and 5 claimed to have smelled something, correct? 6 A That's correct. 7 Q Kathy Ricker, an employee, evacuated 8 and claimed to have smelled sulfur, correct? 9 A That's correct. 10 Q Will James evacuated and claimed to have 11 smelled a sulfur compound, correct? 12 A That's correct. 13 Q By the way, according to the literature, 14 does arsine smell sulfury? 15 A I'm not sure. 16 Q Sean Chantal, an employee, evacuated 17 and didn't smell anything, correct? 18 A That's correct. 19 Q Mark Potteiger, P-o-t-t-e-i-g-e-r, an 20 employee, evacuated and didn't smell anything 21 until he left the work area, correct? 22 A Correct. 23 Q Kaila, K-a-i-l-a, Alexander, an employee, 24 evacuated and claimed to have smelled something 25 but didn't know what it was, correct?</p>	<p style="text-align: right;">Page 387</p> <p>1 hemolysis? 2 A Yes. 3 Q Mr. Tucker asked you a number of times 4 today about artifacts causing elevations in plasma 5 free hemoglobin. 6 Do you recall those questions generally? 7 A Yes. 8 Q Has Mr. Tucker or any person for 9 Solkatronics ever given you any evidence that 10 there was in fact an artifact that was causing the 11 hemolysis that was observed in the plaintiffs? 12 A No. 13 Q Since there's no evidence in the record 14 concerning any artifact that caused the hemolysis, 15 do you have an alternative explanation for the 16 hemolysis? 17 A No. I think alternative explanations are 18 purely speculative. 19 Q But when I say alternative explanation, is 20 the release of arsine and the exposure to arsine an 21 explanation for the hemolysis? 22 A Oh, of course. I didn't understand your 23 question. I thought alternative, aside from the 24 arsine exposure. 25 Q I meant an alternative from an artifact.</p>
<p style="text-align: right;">Page 386</p> <p>1 A Correct. 2 Q And then lastly, David Vance, an 3 employee, evacuated and claimed to have smelled 4 a sulfur smell, correct? 5 A That's correct. 6 Q Now, let's see here, now, back to the 7 minutes of the post-incident evaluation meeting 8 on July 17th, when Jarrad Garrison, the operations 9 manager of Solkatronics, spoke. He said that at 10 approximately 1 o'clock we heard a pop from our 11 dock and a rush of gas. Later on he says, we 12 started evacuating the plant. 13 Now, would it be more appropriate to 14 analyze the hospital records of persons who had a 15 significant opportunity for exposure or for those 16 that had no exposure? 17 A It would be more important to evaluate 18 the hospital records for those who had more or 19 greater opportunity for exposure. 20 Q So if all the Solkatronics employees 21 evacuated and weren't exposed or didn't have an 22 opportunity for exposure, would it be of any 23 benefit to see their hospital records? 24 A Probably not. 25 Q Is plasma free hemoglobin evidence of</p>	<p style="text-align: right;">Page 388</p> <p>1 A Oh, no. There is no other option that I 2 see aside from exposure to arsine. 3 Q Let's see here, part of the materials that 4 you reviewed in this case included a hazard 5 assessment that was actually made by 6 Solkatronics, was it not? 7 A Yes. 8 Q I'm directing your attention to Exhibit 9 No. 26. 10 A Yes. 11 (Ms. Smith exits the proceedings.) 12 Q (BY MR. WARD) Now, in that document 13 they describe several different types of potential 14 releases, do they not, Solkatronics? 15 A Yes. 16 Q And in particular I want to direct your 17 attention to the page that's Bates stamped 18 Solkatronics 00434. 19 Do you see those alternate case 20 selections on that page? 21 A Yes. 22 Q If you would, take a moment and tell me 23 which of those you believe most closely mirrors 24 the release in this case. 25 A (Witness examines document.)</p>

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<p>1 It looks to me like the event description 2 where a cylinder ruptures releasing arsine 3 outdoors. 4 Q Would that be -- 5 A That's -- 6 Q -- number 2? 7 A That's number 2. 8 Q And Solkatronics describes the severity of 9 that particular scenario as being what? 10 A Major. 11 Q And on a scale of one to ten, the risk 12 assessment, numerical risk assessment, they place 13 on what? 14 A Eight. 15 Q Now, I'd like to draw your attention to 16 Bates stamped page 00438. You see that's the 17 alternate scenario number 2? 18 A Yes. 19 Q What is the estimate that -- what does 20 Solkatronics, the defendant in this case, estimate 21 the distance to the toxic end point to be under 22 that scenario? 23 A .7 miles or 1.1 kilometers. 24 Q And what does the term "toxic" mean to 25 you?</p>	<p>1 A Yes. 2 Q And that they made a report as to their 3 findings? 4 A Yes. 5 Q Now, I want to draw your attention to 6 Solkatronics Bates stamp -00068 which is in 7 Exhibit No. 17, and -- 8 MR. TUCKER: What was the name of that 9 again? I wasn't listening. 10 MR. WARD: Bates stamp number? 11 -00068. 12 MS. SMITH: That's in his exhibit. 13 MR. TUCKER: I just would like to know 14 what you're looking at without having to look over 15 your shoulder. 16 MR. WARD: It's the introduction to the 17 report that your client authored. 18 MR. TUCKER: The hazard assessment. 19 MR. WARD: No. What do you call it, 20 the -- 21 MR. TUCKER: Eugene Ngai report? 22 MR. WARD: Mm-hmm. 23 MR. TUCKER: Thank you. 24 Q (BY MR. WARD) There do you see a 25 description of how the release occurred?</p>
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<p>1 A The toxic end point is actually what it 2 means to Solkatronics, is the immediately 3 dangerous to life and health, the IDLH. 4 (Ms. Smith re-enters the proceedings.) 5 Q (BY MR. WARD) So the most likely 6 release scenario that Solkatronics has in their 7 release scenarios creates a zone of toxicity of 8 approximately .7 miles; is that right? 9 A Correct. 10 Q And you're aware, are you not, that all of 11 these 13 -- well, let's see, I'm not going to ask you 12 to speculate on how far these distances were. 13 So would it -- would that bear upon your 14 opinion as to whether or not a person within .7 15 miles had an opportunity for exposure? 16 A Yes, it would. 17 Q If a plaintiff were within Solkatronics' 18 estimated distance toxic end point, that is .7 19 miles, would that increase the likelihood of 20 exposure? 21 A Yes. 22 Q Now, you understand, do you not, that 23 Solkatronics flew down a bunch of people from 24 Allentown to assess what happened after this 25 occurred?</p>	<p>1 A Yes. 2 Q And it says -- and what's your 3 understanding of how it occurred? 4 A There was a cylinder out on the 5 Solkatronics dock, and about 1 o'clock the valve 6 that was on the cylinder was ejected, releasing the 7 gas. 8 Q And what's your understanding of how 9 long it took for the primary release to occur? 10 A About two minutes, according to this 11 report. 12 Q And do you see there that no employee 13 was in the area to witness the event? 14 A Yes. 15 Q So if no employee even witnessed the 16 event and all of them evacuated, would that also 17 decrease the chance of exposure to the 18 Solkatronics employees? 19 A Yes. 20 Q All right. 21 To you what's the significance of whether 22 this release occurred in two minutes, or the 23 primary release occurred in two minutes versus 24 two hours? 25 A The primary significance is whether or</p>

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<p style="text-align: right;">Page 393</p> <p>1 not there was an evacuation that took place. If 2 the release was slow, it might have afforded more 3 time to evacuate and had less opportunity for 4 exposure. When something gets out in two 5 minutes, it's out, it's gone, there's a cloud, and 6 there has to be immediate alarm and evacuation of 7 those that are in the path of that cloud. 8 Q In terms of the dispersion, would it make 9 any difference whether it was dispersed slowly or 10 quickly in terms of assessing the opportunity for 11 exposure? 12 A I don't know the answer to that. 13 Q Now, one of the things that Mr. Tucker 14 asked you about was whether litigation can 15 influence plaintiffs to be untruthful, right? 16 A Yes. 17 Q And I guess you've been involved in a lot 18 of matters of litigation over the years, have you 19 not? 20 A Yes, I have. 21 Q Would the converse be true, that the 22 threat of a significant economic loss to 23 Solkatronics, could that influence their employees 24 to be untruthful in this matter? 25 A Yes. I mean, if the Solkatronics</p>	<p style="text-align: right;">Page 395</p> <p>1 unless they get a blood transfusion there's 2 nothing that's going to reverse their injury? 3 A Correct. 4 Q Are you aware that hemolysis can occur 5 for up to 96 hours after exposure? 6 A Yes. There may be delayed hemolysis. 7 Q And in this case -- 8 MR. TUCKER: I hate to interrupt, but by 9 way of lodging an objection as to form, I would 10 prefer that you not lead the witness. 11 MR. WARD: Okay. 12 Q (BY MR. WARD) In the blood work that 13 was done on these plaintiffs as a general matter, 14 when was it done? 15 A Within 24 hours, within a day or the day 16 of the incident. 17 Q If you were in the position of a treating 18 physician at the hospital where these people were 19 taken, would you want to take additional blood 20 work after 24 hours? 21 A Yes. In the ideal world, my 22 recommendation would have been to have everybody 23 get the same type of blood tests, and to follow 24 them up over the course of the next two to three 25 days, and have them come back and repeat it so</p>
<p style="text-align: right;">Page 394</p> <p>1 employees were worried about their jobs, they 2 might not come forward and complain or to report 3 health effects. 4 Q Well, what if Solkatronics as a 5 company -- you understand they're a for-profit 6 company, don't you? 7 A Yes. 8 Q If Solkatronics as a for-profit company 9 stood to lose a hundred million dollars, for 10 instance, over this release, might that influence 11 their executives to shade the truth? 12 A Potentially, that's correct. 13 Q Now, is there any antidote for an arsine 14 exposure? 15 A No. 16 Q Mr. Tucker asked you about treatment. 17 What treatments are available? 18 A Blood transfusions. That's it. You 19 remove somebody from exposure, you 20 decontaminate them, and you observe them. But 21 there's no medication or antidote to prevent the 22 destruction of the red cells. 23 Q So to the extent that one or more of these 24 plaintiffs were actually injured by the release of 25 arsine, what I'm understanding you to say is that</p>	<p style="text-align: right;">Page 396</p> <p>1 there could be some accurate assessment. 2 Q Now, as I understand it, you've seen Dr. 3 Banner's report, have you not? 4 A Yes. 5 Q He was probably in the best position to 6 dictate the follow-up treatment and diagnosis, was 7 he not? 8 A I believe so. 9 Q And would you -- if you were advising Dr. 10 Banner, would you advise -- have advised him to 11 do more testing than what was done? 12 A I believe Dr. Banner was out there within 13 a day or two of the incident, or was aware by 14 phone or had been notified of the incident. I don't 15 recall which, but I do understand that he was at 16 least notified about the arsine exposure. And my 17 recommendation would have been to do uniform 18 testing, get people in according to a standard 19 protocol, and then to do follow-up over the course 20 of several days. 21 Q I want to ask you a few questions about 22 some individuals that Mr. Tucker asked you about. 23 He was asking about Dr. Kharas, and the possible 24 causes of his fatigue. 25 Were you aware that Dr. Kharas went</p>

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<p style="text-align: right;">Page 397</p> <p>1 through a divorce contemporaneously with these 2 events? 3 A I was not aware of that. 4 Q Can that cause fatigue? 5 A If the divorce was particularly stressful, 6 yes, it may. 7 Q And sometimes it can bring on financial 8 pressures? 9 A Yes. 10 Q And can that also cause fatigue? 11 A If those financial pressures increase 12 stress, anxiety or depression, yes, that may lead 13 to fatigue. 14 Q Mr. Tucker asked you about his 15 hypothyroidism. 16 Can hypothyroidism cause an elevation in 17 plasma free hemoglobin? 18 A No. 19 Q As to Mr. Schnitzer, you said that you 20 didn't believe that his kidney problems were 21 related to an arsine exposure. 22 Tell me what the basis of that opinion 23 was. 24 A It looked to me like he had a form of 25 immunologically mediated or</p>	<p style="text-align: right;">Page 399</p> <p>1 ordering those red blood cells and prepare to 2 transfuse if the patient deteriorates. 3 Q That's not a criteria for determining 4 whether or not a person has been exposed to 5 arsine, is it? 6 A No. The discussion in that chapter that I 7 wrote was not pertaining to what is the evidence 8 for exposure and a release of arsine gas affecting 9 a large population. It was if you have somebody 10 in the ER, what do you need to know to get ready 11 for emergency treatment, including blood 12 transfusion. 13 Q From time to time Mr. Tucker had you 14 look at the lab forms that reported the 15 hemoglobin, blood hemoglobin. 16 Do you recall that? 17 A Yes. 18 Q And we saw one, for instance, where the 19 upper range for normal was 10.4. 20 Do you recall that? 21 A This was the plasma free hemoglobin, 22 that's correct. 23 Q Right. 24 And in a hospital there's -- there 25 oftentimes is a serology department, is there not?</p>
<p style="text-align: right;">Page 398</p> <p>1 immune-system-caused renal failure. He had an 2 antistreptolysin O that was increased. That's a 3 marker for a certain type of kidney disease. I'm 4 not aware that that's linked to arsine gas 5 exposure. 6 Q Were you aware that Mr. Schnitzer 7 reported nausea and vomiting at the time of his 8 exposure? 9 A Yes. 10 Q Would that be a reason to believe that he 11 did in fact -- that he was in fact exposed to 12 arsine? 13 A Yes. I think he was. 14 Q Now, Mr. Tucker asked you a number of 15 questions about the portion in the chapter of the 16 book you wrote having to do with the 1.5 percent. 17 You know what I'm talking about, right? 18 A Yes, I do. 19 Q Now, the 1.5 percent, was that a criteria 20 for determining whether the person has been 21 exposed or criteria for treatment? 22 A It was a criteria for treatment. 23 Q And what do you mean by that? 24 A Meaning it's a level that indicates serious 25 hemolysis, the doctor needs to think about</p>	<p style="text-align: right;">Page 400</p> <p>1 A Yes. 2 Q And is that where the blood work is done? 3 A Well, this would be called a chemistry 4 department, actually. 5 Q And as a treating physician do you 6 ordinarily rely on what the chemistry department 7 reports to you? 8 A Yes. 9 Q Do all treating physicians, as far as you 10 know, rely on what chemistry departments report? 11 A Yes. 12 Q In terms of the blood work? 13 A In terms of the range of values and the 14 blood work that comes back, that's correct. 15 Q In other words, when you get a blood 16 report, you don't go out and independently test it, 17 do you? 18 A No. I rely on the methods, the accuracy, 19 and the validity of the laboratory. 20 Q And if in that instance St. Francis is 21 correct, that a concentration of over 10.4 is 22 significant, you'd ordinarily rely on that as a 23 physician, would you not? 24 A Yes, I would. 25 Q And is there peer-reviewed literature that</p>

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<p style="text-align: right;">Page 401</p> <p>1 reflects that a plasma free hemoglobin count that</p> <p>2 is ten times the normal range is a significant</p> <p>3 marker for arsine exposure?</p> <p>4 A Yes.</p> <p>5 Q Is there peer-reviewed literature which</p> <p>6 you're aware of that says that any elevation in</p> <p>7 plasma free hemoglobin is a marker for exposure?</p> <p>8 A Yes. The peer-reviewed literature says</p> <p>9 that there are a number of markers of arsine</p> <p>10 exposure; and an elevated plasma free hemoglobin</p> <p>11 is one of them. Elevated meaning above the normal</p> <p>12 range.</p> <p>13 Q One of the exhibits which have -- I think</p> <p>14 they marked was a four-page letter from myself</p> <p>15 which I wrote to you concerning various aspects of</p> <p>16 the case.</p> <p>17 Do you remember that letter generally?</p> <p>18 A Yes.</p> <p>19 Q Is it uncommon for plaintiffs' lawyers to</p> <p>20 send to you a letter like that outlining their</p> <p>21 beliefs about the case?</p> <p>22 A No, it's not uncommon.</p> <p>23 Q And did anything I said in that letter</p> <p>24 unfairly influence your opinions?</p> <p>25 A No, not at all. Didn't influence my</p>	<p style="text-align: right;">Page 403</p> <p>1 to have -- would be to have elevated plasma free</p> <p>2 hemoglobin?</p> <p>3 A Less than five percent. If the lab range</p> <p>4 of normal is up to 10.4 percent, that's based on a</p> <p>5 distribution of normal plasma free hemoglobins in</p> <p>6 a normal population. And if you tested a hundred</p> <p>7 people off the street without exposure to arsine,</p> <p>8 by chance alone you would expect no more than</p> <p>9 five of those to have a plasma free hemoglobin</p> <p>10 above 10.4 percent. It's the way the statistics</p> <p>11 work out, and the way the lab sets their normal</p> <p>12 values. They're set to cover 95percent -- actually,</p> <p>13 I take it back. It should be about two and a half</p> <p>14 percent or two to three out of the hundred,</p> <p>15 because the lab sets its values where five percent</p> <p>16 are going to be lower and five -- sorry, two and a</p> <p>17 half percent are going to be lower and two and a</p> <p>18 half percent are going to be higher. It's called the</p> <p>19 95 percent normal distribution.</p> <p>20 Q Like a bell curve?</p> <p>21 A Yes. So you're going to have two and a</p> <p>22 half percent, so between two or three out of a</p> <p>23 hundred people off the street.</p> <p>24 Q So if my math is correct, one person out</p> <p>25 of 40 would have plasma free hemoglobin above</p>
<p style="text-align: right;">Page 402</p> <p>1 opinion at all.</p> <p>2 Q Are the opinions that you've expressed in</p> <p>3 the deposition and in your report yours and yours</p> <p>4 alone?</p> <p>5 A Yes, they are.</p> <p>6 Q They're not my opinions, are they?</p> <p>7 A No, they're not your opinions.</p> <p>8 Q And I didn't have anything to do with</p> <p>9 drafting or authoring your report, did I?</p> <p>10 A Not at all.</p> <p>11 Q Now, you made mention from time to time</p> <p>12 in your deposition about the number of persons</p> <p>13 who had significant elevations of plasma free</p> <p>14 hemoglobin.</p> <p>15 Do you recall, generally, your testimony</p> <p>16 about that?</p> <p>17 A Yes.</p> <p>18 Q How many persons of these 13 do you</p> <p>19 recall had significant elevations?</p> <p>20 A Five.</p> <p>21 Q So just doing the math -- I'm not going to</p> <p>22 do the math.</p> <p>23 But in a population of people outside the</p> <p>24 Port of Catoosa on that day, what do you think the</p> <p>25 statistical probability would be for 5 of 13 persons</p>	<p style="text-align: right;">Page 404</p> <p>1 the normal range?</p> <p>2 A Correct.</p> <p>3 Q And so would that be an exponential</p> <p>4 factor to find 5 of 13?</p> <p>5 A The odds of finding 5 out of 13 with an</p> <p>6 elevated plasma free hemoglobin by chance are</p> <p>7 very large because of just having that or just, you</p> <p>8 know -- you wouldn't want to bet against the</p> <p>9 house on that one.</p> <p>10 Q It would be very unlikely, would it not?</p> <p>11 A Yes.</p> <p>12 Q If we have 5 of these 13 people</p> <p>13 experiencing an elevated plasma free hemoglobin,</p> <p>14 would that in your opinion have anything to do</p> <p>15 with the opportunity for the people in the same</p> <p>16 geographic area to have been exposed to arsine?</p> <p>17 A Yes, most certainly.</p> <p>18 Q Now, are you aware generally that these</p> <p>19 Air Exchanger employees were not evacuated from</p> <p>20 the immediate area of their plant?</p> <p>21 A Yes.</p> <p>22 Q That they remained outside or inside</p> <p>23 their plant for perhaps an hour after the release?</p> <p>24 A Yes.</p> <p>25 Q And with the wind blowing in a</p>

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<p style="text-align: right;">Page 405</p> <p>1 northwesterly direction towards their plant, would 2 that tend to increase or decrease the opportunity 3 for exposure? 4 A Increase. 5 Q And Mr. Tucker asked you about the, for 6 lack of a better term, the decay rate of arsine once 7 exposed to air. 8 Do you know of anything that would 9 suggest that arsine, airborne arsine becomes 10 nontoxic in the first hour of its exposure to air? 11 A I have never seen anything that said that. 12 Q Mr. Tucker asked you about some of these 13 individuals having symptoms of heat stress. 14 Do you recall that generally? 15 A Yes. 16 Q As a physician, would the symptoms of 17 heat stress last for weeks, months and years? 18 A No. The symptoms of heat stress last for 19 hours or at most a few days, depending on the 20 severity. 21 Q And so in doing a differential diagnosis, 22 if a person's symptoms that were consistent with 23 heat stress persisted for months and/or years, 24 could you eliminate heat stress as the cause of 25 their symptoms?</p>	<p style="text-align: right;">Page 407</p> <p>1 been subjected to? 2 A It's the exception rather than the rule. 3 Q Why is that? 4 A Well, when there's an incident, where 5 there's a sudden release, we don't have exposure 6 data. There aren't monitors around the release. 7 We haven't planned for it, so people aren't 8 measuring in the minutes to hours after a gas is 9 released. 10 Q And are you aware that Solkatronics had 11 a system by which they were able to measure the 12 actual releases of arsine at their plant? 13 A I'm aware that they had arsine monitors. 14 I didn't know that they had an ability to measure 15 arsine. 16 Q Let me represent to you there's 17 some testimony in this case that the monitors were 18 recorded via computer, and that Solkatronics has 19 since destroyed that information. 20 Would that information have been helpful 21 to you to have had Solkatronics chose not to 22 destroy it? 23 A If those monitors were in a place that 24 would have measured the release of that arsine 25 gas, absolutely.</p>
<p style="text-align: right;">Page 406</p> <p>1 A Yes. 2 Q And would that cause you to include 3 arsine as the possible cause of their symptoms? 4 A Yes. 5 Q Given all of the information that you 6 know about the release, the proximity of the 7 exposure, and the historical data about this 8 arsine release, is a dose reconstruction necessary 9 for you to make a differential diagnosis in this 10 case? 11 A No. It would be nice to have, but it's not 12 necessary. 13 Q And why is that? 14 A I think given all the facts that we know, 15 that there was a release of arsine from a 16 cylinder, the circumstances in the companies 17 around Solkatronics, what we know about what 18 happened in terms of the evacuation that day, the 19 pattern of symptoms, the evidence from the 20 elevated plasma free hemoglobin, I think we know 21 enough to say that arsine is the cause here. 22 Q Okay. 23 In the exposure cases that you have been 24 involved with, is it the rule or the exception that 25 you know the dose that each person exposed has</p>	<p style="text-align: right;">Page 408</p> <p>1 Q When we talked about the economic value 2 of corruption of the truthfulness in the legal 3 process, might their destruction of that 4 information bear upon whether they want the 5 truth to be known? 6 A Depends on their intent. The answer 7 would be yes if the intent was to destroy evidence 8 so it couldn't be brought to the light of day. 9 Q Now, you have described in your 10 deposition some of the types of symptoms or 11 injuries caused by arsine exposure. 12 Are some of the symptoms -- well, some of 13 the symptoms are immediate, are they not? 14 A Yes. 15 Q Are some delayed? 16 A Yes. 17 Q And tell me about the kind of symptoms 18 that are delayed. 19 A They relate to the nervous system, the 20 central and peripheral nervous system. Headache, 21 dizziness, trouble concentrating, memory loss, 22 numbness and tingling of the fingers and toes. 23 Q And so would it be the rule or the 24 exception that people exposed to arsine would 25 report those symptoms in a delayed fashion?</p>

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<p style="text-align: right;">Page 409</p> <p>1 A Yes. I mean, it would be the rule that a 2 proportion of an exposed population would report 3 those type of symptoms in a delayed or an ongoing 4 fashion after an acute exposure. 5 Q And is that accepted by peer-reviewed 6 literature, best you know? 7 A Yes. 8 Q And are any of the symptoms progressive? 9 That is, do they get worse? 10 A I believe that if somebody has those 11 symptoms and it's been a couple of years after 12 exposure, they're probably going to stay the same. 13 There's some possibility they may get worse, but 14 they probably would stay the same. 15 MR. WARD: That's all the questions I 16 have. 17 MR. TUCKER: Let me ask a couple of 18 questions in response to what Mr. Ward asked 19 you. 20 FURTHER EXAMINATION 21 BY MR. TUCKER: 22 Q You were asked about Air Exchangers, 23 and it was represented to you that Air Exchangers 24 did not evacuate. 25 Do you have any idea what happened at</p>	<p style="text-align: right;">Page 411</p> <p>1 Exchangers say about how long they may have 2 been exposed -- in a position to be exposed? 3 A I do not. 4 Q Do you recall the approximate wind 5 speeds in that weather report that you looked at? 6 A I don't. 7 Q There was a wind speed; is that correct? 8 A Well, there was a wind speed measured at 9 that particular meteorological station. I don't 10 know how it pertains to the Solkatronics plant. 11 Q You indicated you would prefer that there 12 be some follow-up on blood testing in the two to 13 three days following the initial testing. 14 Do you recall that? 15 A Yeah. I was speaking in the ideal 16 situation. 17 Q Are you aware of whether or not the 13 18 people that you have given opinions about today, 19 of those that did have blood tests taken, are you 20 aware of how many of those people went back for 21 follow-up tests in the next two to three days? 22 A I'm not aware that any did. 23 Q And if the records reflect that they did 24 goback for follow-up tests or had follow-up tests 25 on subsequent days, then that would just be</p>
<p style="text-align: right;">Page 410</p> <p>1 Air Exchangers to the employees? 2 A Exactly what happened to them, no. 3 Aside from the fact that they were not evacuated, I 4 don't know exactly where they were standing and 5 what they did. 6 Q How do you know they were not 7 evacuated? 8 A What I recall reading from the exposure 9 analysis. 10 Q Did they stay in the building all 11 afternoon? 12 A I don't know the details of where they 13 were standing. 14 Q Were they evacuated from the building? 15 A Again, I don't know the details. I don't 16 know whether they were evacuated from the 17 building. 18 Q Do you know whether they were standing 19 outside after they left the building? 20 A Again, I don't know whether they were 21 inside or outside. 22 Q Do you have the depositions of any of the 23 AirExchanger employees? 24 A I do not. 25 Q Do you know what any of the people at Air</p>	<p style="text-align: right;">Page 412</p> <p>1 something else that you missed in the record? 2 A Correct. 3 Q You testified -- 4 A Now -- excuse me -- you do jog my 5 memory. I think Mr. Ingram had a test on July 6 11th, he had the 111; and I think he came back 7 the next day, on July the 12th, and it was lower. 8 So he did have a follow-up. 9 Q Wasn't Mr. Sumter 111? 10 A Yes. I'm sorry, Mr. Sumter. 11 Q Anybody else have a follow-up? 12 A (Witness examines documents.) 13 Not that I recall or I noted in my table. 14 Q They may have, and you just didn't get 15 them noted? 16 A Well, I thought I picked up and made a 17 notation of all the pertinent tests. 18 Q You told Mr. Ward that there is 19 peer-reviewed literature that supports the 20 statement that a finding of plasma free 21 hemoglobin ten times the normal range -- and I 22 presume we're referring to 111 percent for Mr. 23 Sumter versus 10.4 percent as the top normal 24 range reported by the St. Francis laboratory -- is 25 a marker for arsine exposure.</p>

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INGRAM v. AIR PRODUCTS

ROBERT HARRISON

June 22, 2005

<p style="text-align: right;">Page 413</p> <p>1 Do you recall that testimony?</p> <p>2 A Yes.</p> <p>3 Q And you and I talked about that too,</p> <p>4 earlier, and that's because all that number tells</p> <p>5 you is that something has happened to red blood</p> <p>6 cells. They've been affected by something, and the</p> <p>7 likely culprit to have affected the red blood cells</p> <p>8 is arsine, correct?</p> <p>9 A Correct.</p> <p>10 Q Did you mean to imply by that statement</p> <p>11 to Mr. Ward that there is peer-reviewed literature</p> <p>12 that says a plasma free hemoglobin level of ten</p> <p>13 times the normal laboratory value is equivalent to</p> <p>14 any injury to the body other than injury identified</p> <p>15 to the red blood cells?</p> <p>16 A I was not answering that question. That</p> <p>17 was not the question that was posed to me. That's</p> <p>18 a different question.</p> <p>19 Q Is there peer-reviewed literature that</p> <p>20 supports that conclusion?</p> <p>21 A Well, that was, I think, your second issue</p> <p>22 that I talked about earlier.</p> <p>23 Q That's the one you want to look for?</p> <p>24 A That's the one that I would look for as to</p> <p>25 whether or not there is delayed or long-term</p>	<p style="text-align: right;">Page 415</p> <p>1 Q (BY MR. TUCKER) Would it surprise you</p> <p>2 to know that?</p> <p>3 A No.</p> <p>4 Q If two of those persons actually walked</p> <p>5 through the cloud and they reported they didn't</p> <p>6 smell anything, what does that tell you?</p> <p>7 A Well, there's a variability in the ability to</p> <p>8 smell arsine. And so odor, as I pointed out</p> <p>9 earlier, is not -- doesn't give sufficient warning.</p> <p>10 So there are some individuals who might be above</p> <p>11 the odor threshold who don't pick up that</p> <p>12 characteristic garlic odor.</p> <p>13 Q Is it also possible that the cloud did not</p> <p>14 contain very much arsine?</p> <p>15 A Possible.</p> <p>16 Q Why would there be a cloud since arsine</p> <p>17 is clear, colorless?</p> <p>18 A There may have been other types of</p> <p>19 combustion products mixed in with that.</p> <p>20 Q Do you know whether or not there was</p> <p>21 combustion in the incident?</p> <p>22 A I don't know.</p> <p>23 Q Do you know whether there was a fire or</p> <p>24 explosion?</p> <p>25 A I know nothing beyond what's in that</p>
<p style="text-align: right;">Page 414</p> <p>1 effects.</p> <p>2 Q With respect to the employees at Air</p> <p>3 Products and the fact that they were evacuated, do</p> <p>4 you know where -- do you know whether any of the</p> <p>5 employees who were identified to you by Mr. Ward</p> <p>6 when he read through the fact that they didn't</p> <p>7 smell anything and didn't feel anything were</p> <p>8 actually in the cloud that has been described as</p> <p>9 the cloud that came from the arsine cylinder?</p> <p>10 MR. WARD: Object to the form. He can</p> <p>11 testify -- he didn't testify about feeling anything.</p> <p>12 MR. TUCKER: Smelling anything.</p> <p>13 THE WITNESS: It looked to me from the</p> <p>14 witness statements that were read to me by</p> <p>15 plaintiff counsel that they were not in a cloud,</p> <p>16 that they said there was a cloud, but they got out.</p> <p>17 They were not in it.</p> <p>18 Q (BY MR. TUCKER) Would it surprise you</p> <p>19 to learn that two of the people whose names were</p> <p>20 read and who you were asked questions about by</p> <p>21 Mr. Ward were actually -- had to walk through the</p> <p>22 cloud in order to leave the premises?</p> <p>23 MR. WARD: Object to the form.</p> <p>24 THE WITNESS: That would be</p> <p>25 interesting.</p>	<p style="text-align: right;">Page 416</p> <p>1 incident report and description analysis done.</p> <p>2 Q Did you read the incident report?</p> <p>3 A I did.</p> <p>4 Q Didn't it say that there was a combustion</p> <p>5 of some of the arsine?</p> <p>6 A I believe that's so.</p> <p>7 Q Is arsine flammable?</p> <p>8 A Oh, I'd have to check.</p> <p>9 Q Would you look at the document right in</p> <p>10 front of you there, which is identified as</p> <p>11 Solkatronics 00 whatever.</p> <p>12 A Okay.</p> <p>13 Q In that document on page 6 in the second</p> <p>14 paragraph you testified that what happened in</p> <p>15 this incident was that the valve was ejected from</p> <p>16 the cylinder. It impacted the cylinder cap, and</p> <p>17 then basically came out, permitting the contents</p> <p>18 of the cylinder to escape.</p> <p>19 A Correct.</p> <p>20 MR. WARD: I don't think he testified</p> <p>21 that's what happened. He testified that's what the</p> <p>22 report said that's what likely happened.</p> <p>23 MR. TUCKER: I understand.</p> <p>24 Q (BY MR. TUCKER) That's what you</p> <p>25 testified the sequence was; is that correct?</p>

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1 A Yeah. I'm basing that on what I read in
2 the report here.
3 Q Now, I'd like you to turn to the hazard
4 assessment that you testified about earlier.
5 Would you do that for me.
6 MR. WARD: It's right there.
7 Q (BY MR. TUCKER) Turn to page 15,
8 which is what you were looking at earlier.
9 A Can you give me the Bates stamp number?
10 Q 00434.
11 A Okay.
12 Q Isn't that the page in which Mr. Ward
13 asked you to identify what happened here, most
14 likely?
15 A Yes.
16 Q And you picked number 1, didn't you, or
17 is it number 2?
18 A No. It looked to me like it was number 2.
19 Q And in that incident you have a cylinder
20 49L.
21 What does that mean?
22 A I don't know.
23 Q Do you see that means 49 liters?
24 A Probably.
25 Q Do you know how much -- what the

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1 Did this cylinder rupture?
2 A Well, this is similar to a rupture.
3 Q Did the cylinder rupture?
4 A Well, I don't know whether it ruptured
5 or not, but it is similar, the most similar to this
6 incident, in that it releases arsine gas out of a
7 cylinder outdoors.
8 Q We're going to talk about that, but I'm
9 saying did the cylinder rupture?
10 A Let me ask you what the definition of a
11 rupture is.
12 Q Didn't you just read to me a minute ago
13 from the report of the incident that what happened
14 was the valve came out of the top of the cylinder?
15 A Yeah, I would define that as a rupture of
16 a cylinder in some form. That's why I was asking
17 you what your definition of a rupture is.
18 Q Look instead, if you would, at scenario
19 number 3.
20 Does scenario number 3 describe a valve
21 failure?
22 A Yes.
23 Q Isn't that what happened here, a valve
24 failure?
25 MR. TUCKER: There's my phone ringing.

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1 quantity of arsine for 49 liters is?
2 A No.
3 Q A little bit ago you were asked to turn
4 to the next page and look at arsine ARS number 2.
5 MR. WARD: No, it's not on the next page.
6 It's on -438.
7 MR. TUCKER: -438.
8 Q (BY MR. TUCKER) Does that give a
9 release rate?
10 A Yes.
11 Q What?
12 A 130 pounds per second.
13 Q Look back to page -434, if you would -- I
14 mean -435. -435 arsine ARS number 2 is cylinder
15 overfill and rupture; is that right?
16 A Yes.
17 Q Isn't that the one you identified on the
18 previous page as being the most likely incident?
19 A Yes.
20 Q And what quantity of material was
21 released in that?
22 A It looks like they say that's 130 pounds.
23 Q Now, it says in -- going back to the
24 previous page, it says the cylinder 49L is
25 overfilled and ruptured.

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1 (Discussion off the record.)
2 THE WITNESS: Well, I'm reading the
3 description for number 3. It says, "Cylinder with
4 brass connection as weak point of valve insert into
5 cylinder falls over shearing or severely damaging
6 valve releasing contents."
7 That sounds less similar to me than
8 scenario 2, which is a tank rupturing, implying an
9 immediate type of release, releasing the arsine
10 outdoors. The scenario as described in the
11 analysis on Bates -438.
12 Q (BY MR. TUCKER) Let's assume that a
13 tank rupture means that the tank itself physically
14 ruptures, splits.
15 A Okay.
16 Q That's a tank rupture, isn't it?
17 A Well, that's one definition of -- a tank
18 rupture to me, either a tank splits or something
19 comes off and you get the immediate release of the
20 contents in a very short period of time.
21 Q Look at number 3. If the valve is
22 sheared, doesn't that then fit your definition of a
23 rupture?
24 A It's possible. I guess if a valve shears
25 and it suddenly releases the quantity outdoors, it

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<p style="text-align: right;">Page 421</p> <p>1 would be the same as number 2. I mean, these 2 EPA exposure scenarios are assuming, I believe, 3 different release rates. 4 Q Have you ever done one of these? 5 A I have never done one of these. 6 Q Do you know what they are? Do you know 7 what a hazard assessment is? 8 A It's an assessment to determine risk. 9 Q Are you an expert in hazard assessments? 10 A No. 11 Q Would the answer as to which scenario is 12 most accurate be better left to someone who is an 13 expert in interpreting these? 14 A I think as to which scenario accurately 15 applies here, exposure scenario 2 or exposure 16 scenario 3, requires the expertise of somebody 17 who -- well, I'm going to see if I can answer your 18 question. 19 I don't think it requires the expertise of 20 another expert. It might require me 21 understanding more carefully what the two 22 different exposure scenarios are meant to imply 23 and how it corresponds to what happened here. 24 Q For example, if you knew what was meant 25 by tank rupture in this description, that would</p>	<p style="text-align: right;">Page 423</p> <p>1 know why there isn't exposure scenario number 3 2 here. 3 Q You were asked about the fact that the 4 people that were at Air Products that were 5 evacuated from the area, which would include the 6 production area, of course, during the time that 7 this tank was venting for two minutes for the 8 primary exposure, none of them smelled anything, 9 and you posited that one explanation for that was 10 that they evacuated before they had a chance to 11 smell anything; is that right? 12 A Yes. 13 Q Is it also possible that during that period 14 of time that they were evacuating, because of 15 whatever else happened at the time of the 16 accident, the extent to which the arsine burned 17 because it's flammable, the way in which it was 18 dispersing, is it possible there simply wasn't 19 enough concentration of arsine for them to smell? 20 A It's possible. 21 Q And do you know which it was? 22 A I think it was the first alternative. 23 Q Do you know which it was? 24 A I don't think anybody -- well, yes, I think 25 it was number one. Based on what other people in</p>
<p style="text-align: right;">Page 422</p> <p>1 help you, wouldn't it? 2 A If I knew exactly what is meant by tank 3 rupture, and does it conform to the Solkatronics 4 incident, that would be helpful. 5 Q Or, conversely, if a sheared valve is the 6 same thing as a failed valve as described in the 7 incident report, that would be good for you to 8 know, wouldn't it? 9 A Correct. I could have more information 10 or could follow up on that and confirm the 11 exposure scenarios and what they meant. 12 Q In looking at the hazard assessment -- if 13 you'd give that back to the witness again just for 14 a minute, Mr. Ward -- following through those 15 documents, to ARS arsine scenarios, if it is 16 number 3, if a failed valve as set out in number 3 17 is the same failed valve that occurred on 18 Solkatronics on July 11th, 2003 [sic], then do you 19 find any toxic end point data with respect to that 20 event? 21 A Not in this document. It looks like they 22 don't do number 3. 23 Q If you look at number 3, what's the 24 severity of that incident identified to be? 25 A Minor. I don't know personally. I don't</p>	<p style="text-align: right;">Page 424</p> <p>1 the vicinity of the Solkatronics plant reported and 2 the testimony from the Solkatronics employees 3 seemed to be pretty firm that they all got out 4 except for a couple of them. It sounds like two 5 may have had to walk through that cloud. 6 Q Do you know whether any one of the 7 persons whose records you reviewed and about 8 whom you've given opinions today indicated they 9 had smelled a garlic odor, made that observation 10 to anyone at any time before they were told by a 11 third party discussing the incident that one of the 12 incidents of an arsine exposure could be a garlic 13 odor? 14 A I don't know. 15 Q You indicated that you thought a 16 physician would want this kind of information 17 regarding plasma free hemoglobin levels in order 18 to determine the condition of his patient, is that 19 right, or words to that effect? 20 A I said it would be good practice to do 21 some follow-up tests to look at the delayed 22 hemolysis. 23 Q Now, are you telling us that in your 24 opinion that an elevation, that the mere fact of an 25 elevation of the plasma free hemoglobin above the</p>

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1 normal reference range constitutes hemolysis?
2 A Yes. It indicates that there's an effect on
3 the red blood cells.

4 Q And there is no gap between the top of
5 the normal reference range and the bottom
6 threshold of what you would consider to be
7 hemolysis; is that correct?

8 A I didn't understand the question.

9 Q Well, we have a normal reference range
10 for plasma free hemoglobin that comes from the
11 chemistry department at the hospital. I think
12 that's a certain point.

13 A Correct.

14 Q That's that hospital's normal reference
15 range.

16 A Correct. It's based on a population of
17 normal individuals.

18 Q What I'm asking you is is there
19 peer-reviewed literature that says that as the
20 plasma free hemoglobin level is reported as
21 elevated above the normal reference range, is
22 there some area or further range through which
23 that hemoglobin report can be elevated before
24 someone says this is sufficiently elevated to
25 constitute hemolysis?

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1 A Yeah, I think the next day he was 22.

2 Q Was he ever diagnosed as having evidence
3 of hemolysis?

4 A I'd have to take a look at the records to
5 see what the exact diagnosis was at the time that
6 he was seen.

7 Q Do you recall whether he was ever
8 diagnosed with having hemolysis?

9 A I'd have to take a look at the medical
10 records at the time he was seen to look at the
11 exact diagnosis.

12 Q I appreciate that, but I am asking what
13 you recall.

14 A I could take a look at the medical
15 records. I don't recall one way or the other. I'd
16 have to refresh my memory by looking at the
17 medical records.

18 Q Well, let me hand you the discharge
19 summary of Mr. Sumter. I've taken the liberty of
20 highlighting the laboratory for you. Would you
21 mind reading that into the record, please.

22 A Just the highlighted, or just the whole --

23 Q Read the laboratory part.

24 A Laboratory tests remain negative for
25 hemolysis. His presenting symptoms resolved. No

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1 A There is not. If the plasma free
2 hemoglobin is above the normal range, it's either
3 the tail end of that bell-shaped curve, and
4 typically that's a mild elevation, it's due to some
5 artifact, mechanical problems of drawing the
6 blood, or it indicates hemolysis. In this case
7 there isn't any other cause that I can find other
8 than arsine.

9 Q Might other physicians disagree with you
10 on that?

11 A I don't know.

12 Q You indicated that you had reviewed the
13 hospital records for Mr. Sumter, and he's the man
14 who had the highest plasma free hemoglobin levels
15 of anybody that you saw, right, in the people you
16 looked at?

17 A Yes.

18 Q And you didn't see them. You looked at
19 the records for some of them, right?

20 A That's correct.

21 Q And you looked at the St. Francis records
22 for Mr. Sumter; is that correct?

23 A Yes.

24 Q And you said you're aware that he got one
25 test, and that he was retested; is that right?

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1 evidence of any sequelae.

2 MR. WARD: I'm sorry. What was the --

3 THE WITNESS: With no evidence of any
4 sequelae.

5 Q (BY MR. TUCKER) What was that first
6 sentence again?

7 A Laboratory tests remain negative for
8 hemolysis.

9 Q Is that not the man that you've told us
10 had this gigantically elevated plasma free
11 hemoglobin level?

12 A Well, first of all, my testimony was not it
13 was gigantically elevated. I said it was ten times
14 the upper limit of normal.

15 Q That's that man, isn't it?

16 A I'm sorry?

17 Q That is the same man, isn't it?

18 A What was your question? I'm sorry.
19 We're talking about Mr. Sumter, that's correct.

20 Q Yes, same guy.

21 And in the discharge summary the
22 physician discharging him stated in his record
23 that there is no laboratory values or -- what did
24 he say again? Laboratory values what?

25 A Would you read my response back. This

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<p style="text-align: right;">Page 429</p> <p>1 is the third time.</p> <p>2 Q Well, I didn't write it down.</p> <p>3 A Okay. Here you go. You can read it</p> <p>4 back.</p> <p>5 Q Laboratory tests remain negative for</p> <p>6 hemolysis.</p> <p>7 What did Dr. Smith, that dictated that,</p> <p>8 mean by that?</p> <p>9 A Well, you'd have to ask Dr. Smith what he</p> <p>10 meant by it.</p> <p>11 I also do note that there's no diagnosis</p> <p>12 here on the discharge summary. This was under</p> <p>13 hospitalization. So, in fact, I think we need to go</p> <p>14 back and look at the admission records and the</p> <p>15 complete hospital records to see if we could find a</p> <p>16 diagnosis.</p> <p>17 Q Did you have an opportunity to read</p> <p>18 the history of Mr. Sumter's present illness as</p> <p>19 contained in the discharge summary?</p> <p>20 A Yes.</p> <p>21 Q What was his history of arsine exposure?</p> <p>22 A Would you like me to read that?</p> <p>23 Q Just the part about how much arsine he</p> <p>24 was exposed to, and for how long.</p> <p>25 A Why don't I just read it into the record.</p>	<p style="text-align: right;">Page 431</p> <p>1 arsine.</p> <p>2 Q So is it fair to say that they were --</p> <p>3 would have been alert for hemolysis?</p> <p>4 A That's why they got the elevated -- that's</p> <p>5 why they draw the plasma hemoglobin, that's</p> <p>6 correct.</p> <p>7 Q And did anywhere in that record anybody</p> <p>8 ever find anything other than laboratory values</p> <p>9 remained negative for hemolysis?</p> <p>10 A I don't know. These are what would be</p> <p>11 called typewritten records reflecting the admission</p> <p>12 and the discharge of Mr. Sumter. There might be</p> <p>13 some other notes made in the chart itself if we got</p> <p>14 those from the hospital. In this record here, the</p> <p>15 answer is no, but it would be important if we</p> <p>16 wanted to really accurately answer your question</p> <p>17 to see all the notes that the doctors made.</p> <p>18 Q Doctor, I'll represent to you that St.</p> <p>19 Francis Hospital, they do everything electronically,</p> <p>20 and that does constitute the entire record of Mr.</p> <p>21 Sumter. There are no handwritten notes.</p> <p>22 A There have to be.</p> <p>23 Q No.</p> <p>24 A There are no -- when the doctor admits a</p> <p>25 patient and then does visits on the patient, there</p>
<p style="text-align: right;">Page 430</p> <p>1 Q Fine.</p> <p>2 A The patient is a 41-year-old male who was</p> <p>3 exposed to arsine yesterday at the Port of Catoosa</p> <p>4 for a very brief period of time. He moved upwind</p> <p>5 as soon as he was aware of the odor. Reported</p> <p>6 some sinus congestion, drainage, sinus irritation,</p> <p>7 eye irritation and throat discomfort. The patient</p> <p>8 was admitted to the hospital for evaluation.</p> <p>9 Q Now, just so you don't feel like I'm trying</p> <p>10 to be unfair with you, because I don't want to be</p> <p>11 unfair --</p> <p>12 MR. WARD: Object to the side bar. Move</p> <p>13 to be stricken.</p> <p>14 Q (BY MR. TUCKER) -- there's the whole</p> <p>15 record for Mr. Sumter.</p> <p>16 A Okay.</p> <p>17 Q Is what you were looking for, the</p> <p>18 missing piece, the admissions information there?</p> <p>19 A On page 3 of these records, Dr. King,</p> <p>20 X-i-n-g, has impression, which is what you'd</p> <p>21 usually refer to as the diagnosis. And the first is</p> <p>22 number 1, arsine exposure.</p> <p>23 Q Is that what you're looking for?</p> <p>24 A Yeah. That's good enough. It basically</p> <p>25 says that his doctors thought he was exposed to</p>	<p style="text-align: right;">Page 432</p> <p>1 are no handwritten notes?</p> <p>2 Q Everything is entered into the computer.</p> <p>3 MR. WARD: Object to Counsel's</p> <p>4 testimony.</p> <p>5 MR. TUCKER: Everything is --</p> <p>6 THE WITNESS: Okay. Well, you want to</p> <p>7 pose a hypothetical, then, that there are no other</p> <p>8 medical records from this hospital? Because I</p> <p>9 would find it extraordinary. I've never seen a</p> <p>10 medical record without handwritten records. I've</p> <p>11 never seen a medical record without handwritten</p> <p>12 order notes, handwritten nursing notes. I've</p> <p>13 never seen just a medical record that's completely</p> <p>14 electronic.</p> <p>15 Q (BY MR. TUCKER) Looking back to the</p> <p>16 discharge summary, Doctor, the doctor that</p> <p>17 dictated the discharge summary, Brad V. Smith,</p> <p>18 M.D., stated laboratory tests remained negative</p> <p>19 for hemolysis?</p> <p>20 MR. WARD: How many times are you</p> <p>21 going to repeat that at 7 o'clock in the evening?</p> <p>22 Q (BY MR. TUCKER) If you take that</p> <p>23 doctor's statement at face value, what does that</p> <p>24 tell you about that doctor's opinion as to whether</p> <p>25 Mr. Sumter ever demonstrated hemolysis during</p>

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<p style="text-align: right;">Page 433</p> <p>1 the time he was at St. Francis Hospital?</p> <p>2 A You'd have to ask Dr. Smith about what</p> <p>3 he meant.</p> <p>4 Q Well, what does it mean to you?</p> <p>5 A What does what mean to me?</p> <p>6 Q Laboratory tests remained negative for</p> <p>7 hemolysis.</p> <p>8 A It means exactly what it states. I don't</p> <p>9 have any other interpretation about what it</p> <p>10 means. You'd have to ask Dr. Smith. He may have</p> <p>11 an opinion. I have a separate opinion about</p> <p>12 whether or not there was hemolysis.</p> <p>13 MR. TUCKER: Thank you, sir.</p> <p>14 MR. WARD: Okay. I got to follow up.</p> <p>15 I'm going to make it really, really brief.</p> <p>16 FURTHER EXAMINATION</p> <p>17 BY MR. WARD:</p> <p>18 Q Hemolysis means destruction of what?</p> <p>19 A Red blood cells.</p> <p>20 Q And when destruction of the red blood</p> <p>21 cells occurs, how is that manifested? I mean,</p> <p>22 what manifestation is there in blood work if</p> <p>23 there's been destruction of red blood cells?</p> <p>24 A Can affect the haptoglobin. It could drop</p> <p>25 the hemoglobin. It can cause an increase in your</p>	<p style="text-align: right;">Page 435</p> <p>1 evidence than that.</p> <p>2 MR. WARD: Okay. I don't have any</p> <p>3 further questions.</p> <p>4 MR. TUCKER: Did Dr. Smith find that</p> <p>5 111 to be significant based on what you read?</p> <p>6 THE WITNESS: You'd have to ask Dr.</p> <p>7 Smith. I think what he meant was that the</p> <p>8 following day his plasma hemoglobin was 22, and</p> <p>9 that there was no evidence of ongoing hemolysis.</p> <p>10 But you'd have to ask Dr. Smith to verify that.</p> <p>11 I've reviewed thousands of medical</p> <p>12 records, and I see what physicians chart in these</p> <p>13 toxic exposure cases. And my guess is that if you</p> <p>14 ask Dr. Smith -- again, I think you'd have to ask</p> <p>15 him to clarify what he meant -- I think he means</p> <p>16 that there's no evidence that hemolysis is</p> <p>17 continuing, because it drops from 111 to 22.</p> <p>18 MR. TUCKER: That's all. Thank you.</p> <p>19 MR. WARD: Well, I get the last word, so</p> <p>20 I'll ask one more: Could it mean that there was</p> <p>21 nohemoglobinuria if Dr. Smith meant no</p> <p>22 hemoglobinuria?</p> <p>23 THE WITNESS: He could have meant</p> <p>24 that, but I actually think what he means --</p> <p>25 putting myself in his shoes, I think really he</p>
<p style="text-align: right;">Page 434</p> <p>1 plasma free hemoglobin, or it can cause</p> <p>2 hemoglobin to spill out into the urine. You can</p> <p>3 pick it up on a dipstick.</p> <p>4 Q The last one is hemoglobinuria?</p> <p>5 A Yes.</p> <p>6 Q And the third one is a rise in plasma free</p> <p>7 hemoglobin?</p> <p>8 A Correct.</p> <p>9 Q And that's what was reported in Mr.</p> <p>10 Sumter's case, correct?</p> <p>11 A Correct.</p> <p>12 Q And so that would be evidence of</p> <p>13 hemolysis, wouldn't it?</p> <p>14 A Absolutely.</p> <p>15 MR. WARD: Okay.</p> <p>16 THE WITNESS: I would just want to add</p> <p>17 that he had a plasma free hemoglobin of over 111</p> <p>18 on July 11th, and it was 22 the following day,</p> <p>19 which means that in my view it's very unlikely to</p> <p>20 be artifactual, because there's no reason why it</p> <p>21 would be 111 one day and then drop the following</p> <p>22 day. That indicates that he was exposed acutely</p> <p>23 to arsine and the -- that the hemoglobin</p> <p>24 circulating in his blood was excreted and was</p> <p>25 dropping to normal. You can't get any better</p>	<p style="text-align: right;">Page 436</p> <p>1 means that there's no evidence of ongoing</p> <p>2 hemolysis. That there is -- he's getting better,</p> <p>3 which is why they observed him until the following</p> <p>4 day and repeated the test.</p> <p>5 MR. WARD: That's all I have.</p> <p>6 MR. TUCKER: I have one more question.</p> <p>7 MR. WARD: I am going to get the last</p> <p>8 one.</p> <p>9 MR. TUCKER: Doctor, under the rules</p> <p>10 you have the right to read and sign your</p> <p>11 deposition, or you may waive that right. It's your</p> <p>12 choice.</p> <p>13 THE WITNESS: I would prefer to waive</p> <p>14 the right.</p> <p>15 MR. TUCKER: I got the last question.</p> <p>16 MR. WARD: Now I've got one more</p> <p>17 question: Are you sure?</p> <p>18 THE WITNESS: Yes.</p> <p>19 MR. TUCKER: Thank you.</p> <p>20 (Exhibit Nos. 47, 48 and 49 marked for</p> <p>21 identification.)</p> <p>22 (The deposition proceedings concluded at</p> <p>23 7:00 p.m.)</p> <p>24</p> <p>25</p>

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INGRAM v. AIR PRODUCTS

ROBERT HARRISON

June 22, 2005

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1 STATE OF CALIFORNIA)

2) ss

3 COUNTY OF SAN MATEO)

4 I hereby certify that the witness in the
 5 foregoing deposition, ROBERT JAY HARRISON,
 6 M.D., M.P.H., was by me duly sworn to testify to
 7 the truth, the whole truth and nothing but the
 8 truth, in the within-entitled cause; that said
 9 deposition was taken at the time and place herein
 10 named; that the deposition is a true record of the
 11 witness's testimony as reported by me, a duly
 12 certified shorthand reporter and a disinterested
 13 person, and was thereafter transcribed into
 14 typewriting by computer.

15 I further certify that I am not interested
 16 in the outcome of the said action, nor connected
 17 with, nor related to any of the parties in said
 18 action, nor to their respective counsel.

19 IN WITNESS WHEREOF, I have hereunto
 20 set my hand this 29th day of June, 2005.

21

22

23

24 CARYE C. TORRES, CSR #10685

25 STATE OF CALIFORNIA

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